ENGINEERING CHANGE NOTICE

Page 1 of 2

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Proj.
ECN

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14b. Justification Details This ECN will assist in the completion of the documentation process for this document.							
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Tank 241-B-109, Cores 169 and 170 Analytical Results for the Final Report

Jennifer L. Nuzum

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~~WHC~~-SD-WM-DP-201, REV. 1

ANALYTICAL SERVICES

**TANK 241-B-109, CORES 169 AND 170
ANALYTICAL RESULTS FOR THE FINAL REPORT**

Project Coordinator: JENNIFER L. NUZUM

**Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management**

by

**222-S Laboratory
Rust Federal Services of Hanford Inc.
P.O. Box 700
Richland, Washington**

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This Document consists of two sections.

Part I consists of pages 1 through 391. Pages ii, 2, 9, 19, 40, 49, 58, 68, 73 and 345 were intentionally left blank.

Part II consists of pages 2-1 through 2-105, pages 2-2, 2-12, 2-22, 2-31 and 2-41 were intentionally left blank.

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NARRATIVE

~~WMC~~^{HNF} SD-WM-DP-201, REV. 1

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222-S ANALYTICAL SERVICES

TANK 241-B-109, CORES 169 AND 170, ANALYTICAL RESULTS FOR THE FINAL REPORT

This document is the final laboratory report for Tank 241-B-109. Push mode core segments were removed from risers 4 and 7 between August 22, 1996, and August 27, 1996. Segments were received and extruded at 222-S Analytical Laboratory. Analyses were performed in accordance with *Tank 241-B-109 Push Mode Core Sampling and Analysis Plan* (TSAP) (Kruger, 1996) and *Tank Safety Screening Data Quality Objective* (DQO) (Dukelow, et al., 1995).

The results for primary safety screening data, including differential scanning calorimetry (DSC) analyses, thermogravimetric analyses (TGA), bulk density determinations, and total alpha activity (AT) analyses for each subsegment, were presented in the 45-Day report (Rev. 0 of this document). The 45-Day report is included as Part II of this revision. The raw data for DSC and TGA is found in Part II of this report. The raw data for all other analyses are included in this revision.

Sample Handling

Attachment 1 illustrates subsamples generated in the laboratory for analysis and identifies their sources. This reference also relates tank farm identification numbers to their corresponding 222-S Laboratory Information Management System sample numbers. These diagrams supersede the diagrams presented in Part II of this revision.

Sample handling and appearance information for the subsegments may be found in Rev. 0 of this document.

Field Blank

A field blank was provided to 222-S Laboratory with Core 170. This sample was treated as a drainable liquid in accordance with TSAP.

Hydrostatic Head Fluid

A lithium bromide solution blank (HHF) was provided to 222-S Laboratory with Core 170. This sample was analyzed by inductively coupled plasma (ICP) spectroscopy and ion chromatography (IC) in accordance with TSAP.

Analytical Results Summary

The Data Summary Table (Table 1) included in this revision compiles safety screening analytical results in accordance with TSAP and DQO.

The liquid subsamples that were prepared for analysis by an acid adjustment of the direct subsample are indicated by a "D" in the A# column in Table 1. The solid subsamples that were prepared for analysis by performing a fusion digest are indicated by a "F" in the A# column in Table 1. The solid subsamples that were prepared for analysis by performing a water digest are indicated by a "W" in the A# column of Table 1.

Sp.G. - Specific Gravity

There were no exceptions to the quality control parameters stated in TSAP for these samples.

IC - Ion Chromatography

Only bromide (Br⁻) analyte results were considered in this report. Other "opportunistic" analyte results (Kristofzski, 1995) are included in Table 1. These analytes do not have customer defined quality control (QC) parameters and are not discussed.

The field blank Br⁻ result was $<7.50 \text{ E-01 } \mu\text{g/mL}$. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

ICP - Inductively Coupled Plasma Spectroscopy

Lithium (Li) is the only analyte considered in this report. Other "opportunistic" analyte results are included in Table 1. These analytes do not have customer defined QC parameters and are not discussed.

The field blank Li result was $<1.30\text{E-1 } \mu\text{g/mL}$. There were no exceptions to the QC parameters stated in TSAP for these subsamples.

TOC - Total Organic Carbon

RPD between sample and duplicate exceeded 20% for two of ten subsamples. The first, Upper Half Segment 2A of Core 169 (S96T005112), was performed in triplicate. These results are presented in Table 2. Poor precision was caused by sample heterogeneity. No reruns were requested. The second subsample, Quarter Segment D of Core 170 (S96T005136), resulted in a RPD of 32.9%. The TOC result for both the sample and duplicate were near the baseline, thereby decreasing the precision.

The field blank result was $<4.00\text{E}+01$ $\mu\text{g/mL}$. Standard recovery and spike recovery criteria were met for all subsamples.

Table 2. Triplicate Results for Total Organic Carbon

Sample ID	Sample Result ($\mu\text{g/g}$)	Duplicate Result ($\mu\text{g/g}$)	Triplicate Result ($\mu\text{g/g}$)	Mean ($\mu\text{g/g}$)
S96T005112	5.36E+03	3.12E+03	7.00E+03	5.16E+03

TIC - Total Inorganic Carbon

TIC results are presented in Table 1 as "opportunistic." There were no customer defined TIC QC parameters. The results are not discussed.

Procedures

Table 3 lists the analytical procedures used for performing the sample analyses. Abbreviations for analyses are defined in the table notes.

Table 3. Analytical Procedures

Analysis	Sample Portion	Preparation Procedure	Analysis Procedure
Sp.G.	Liquid	N/A	LA-510-112 Rev. C-3
ICP	Solid Liquid	LA-549-141 Rev. F-0 N/A	LA-505-151 Rev. D-3 LA-505-161 Rev. B-1
IC	Solid Liquid	LA-504-101 Rev. E-0 N/A	LA-533-105 Rev. D-1
TOC	Solid	N/A	LA-342-100 Rev. E-0
TIC	Solid	N/A	LA-342-100 Rev. E-0

Table notes:

N/A = not applicable (these are direct samples)
 Sp.G. = specific gravity
 ICP = inductively coupled plasma
 IC = ion chromatography
 TOC = total organic carbon
 TIC = total inorganic carbon

References

- Dukelow, G. T., J. W. Hunt, H. Babad, and J. E. Meacham, 1995, *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, WA 99352.
- Field, J. G., 1996, *Tank 241-B-109 Rotary Mode Core Sampling and Analysis Plan*, WHC-SD-WM-TSAP-087, Rev. 1, Westinghouse Hanford Company, Richland, WA 99352.
- Kristofzski, J. G., 1995a, Letter to J. H. Baldwin, "Directions for Opportunistic Analyses," 75310-95-103, dated September 13, 1995.
- Meznarich, H. K., 1995, *Quality Assurance Plan for the 222-S Laboratories*, WHC-SD-CP-QAPP-016, Rev. 0, Westinghouse Hanford Company, Richland, WA 99352.

~~WMC~~^{HAF}-SD-WM-DP-201, REV. 1

ATTACHMENT 1

B-109 SAMPLE BREAKDOWN

~~HNF~~
~~WMC~~ SD-WM-DP-201, REV. 1

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B-109
Core:169
Seg: 1 (96-491)
S96T004927

Attachment 1
Page 1 of 8

Lower
Half

HOMGNZ01
AFCHIV01

S96T005101

SAMPAMT1
DOSE-01
@TICTOC:1
DSC-01
USC-02
TGA-01

S96T005102

FUSION01
DOSE-02
@C-F:01
@ALPHA01

S96T005103

H20DIG01
DOSE-02
@C-01

S96T005104

W/C
H/C-SD-WM-DP-201, REV. 1

B-109
Core:169
Seg: 2 (96-492)
S96T004934

Attachment 1
Page 2 of 8

W/E
HIG-SD-WM-DP-201, REV. 1

B-109
Core:169
Seg: 2A (96-492A)
S96T004928

Attachment 1
Page 3 of 8

Upper
Half

S96T005111

S96T005112

SIMPACT1
DOSE-01
@PC-001
BSC-02
TGA-01

S96T005113

FUSIONK1
DOSE-01
@PC-001

S96T005114

H2ODIG01
DOSE-02
@PC-01

12

B-109
Core:170
Seg: HHF (LiBr Blank)
S96T004933

Attachment 1
Page 4 of 8

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~~WHC~~ SD-WM-DP-201, REV. 1

B-109
Core:170
Seg: Field Blank
S96T004929

Attachment 1
Page 5 of 8

B-109
Core:170
Seg: 1 (96-494)
S96T004930

Attachment 1
Page 6 of 8

HNF
SD-WM-DP-201, REV. 1

B-1092
Core:170
Seg: 2 (96-495)
S96T004931

Attachment 1
Page 7 of 8

HF
HFE-SD-WM-DP-201, REV. 1

B-109
Core:170
Seg: 3 (96-496)
S96T004932

Attachment 1
Page 8 of 8

Upper
Half

S96T005123

SAMPAM11
DOSE-01
@IC-TOC-1
DSC-01
DSC-02
TGA-01

S96T005124

17

FUSION01
DOSE-02
@ICP-F01

S96T005125

H20DM001
DOSE-02
@IC-01

S96T005126

11/15
HAG-SD-WM-DP-201, REV. 1

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~~WMC~~ SD-WM-DP-201, REV. 1

SAMPLE DATA SUMMARY

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~~WHG~~-SD-WM-DP-201, REV. 1

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Table 1. Data Summary Table
B-109

CORE NUMBER: 169
SEGMENT #: 2A

SEGMENT PORTION: U Upper Half of Segment

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
				Lower	Upper									
S96T005112		DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.3	93.15	n/a	90.90	89.60	90.25	1.44	n/a	n/a	n/a
S96T005112		DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.3	n/a	n/a	1.10e+02	109.0	109.5	0.91	n/a	n/a	n/a
S96T005112		% Water by TGA using Mettler	%	None	None	100.8	n/a	14.27	20.96	17.62	38.0	n/a	n/a	n/a
S96T005112		TIC by Acid/Coulometry	ug/g	None	None	95.52	2.700	2.51e+03	2.43e+03	2.47e+03	3.24	106.0	5.000	n/a
S96T005112		TOC by Persulfate/Coulometry	ug/g	-1.0e+00	3.0e+04	88.00	1.700	5.36e+03	3.12e+03	4.24e+03	52.8	117.0	40.00	n/a
S96T005113	F	Silver -ICP-Fusion	ug/g	None	None	101.2	<1.00e-02	<2.20e+02	<2.25e2	n/a	n/a	n/a	221.0	n/a
S96T005113	F	Aluminum -ICP-Fusion	ug/g	None	None	100.6	<5.00e-02	1.01e+05	1.12e+05	1.06e+05	10.3	n/a	1.10e+03	n/a
S96T005113	F	Arsenic -ICP-Fusion	ug/g	None	None	104.4	<1.00e-01	<2.20e+03	<2.25e3	n/a	n/a	n/a	2.21e+03	n/a
S96T005113	F	Boron -ICP-Fusion	ug/g	None	None	102.0	<5.00e-02	<1.10e+03	<1.13e3	n/a	n/a	n/a	1.10e+03	n/a
S96T005113	F	Barium -ICP-Fusion	ug/g	None	None	101.2	<5.00e-02	<1.10e+03	<1.13e3	n/a	n/a	n/a	1.10e+03	n/a
S96T005113	F	Beryllium -ICP-Fusion	ug/g	None	None	103.0	<5.00e-03	<1.10e+02	<1.13e2	n/a	n/a	n/a	110.0	n/a
S96T005113	F	Bismuth -ICP-Fusion	ug/g	None	None	106.4	<1.00e-01	2.58e+03	3.83e+03	3.20e+03	39.0	n/a	2.21e+03	n/a
S96T005113	F	Calcium -ICP-Fusion	ug/g	None	None	96.60	<1.00e-01	2.81e+03	3.34e+03	3.08e+03	17.2	n/a	2.21e+03	n/a
S96T005113	F	Cadmium -ICP-Fusion	ug/g	None	None	101.4	<5.00e-03	<1.10e+02	<1.13e2	n/a	n/a	n/a	110.0	n/a
S96T005113	F	Cerium -ICP-Fusion	ug/g	None	None	105.2	<1.00e-01	<2.20e+03	<2.25e3	n/a	n/a	n/a	2.21e+03	n/a
S96T005113	F	Cobalt -ICP-Fusion	ug/g	None	None	103.0	<2.00e-02	<4.41e+02	<4.51e2	n/a	n/a	n/a	443.0	n/a
S96T005113	F	Chromium -ICP-Fusion	ug/g	None	None	101.8	<1.00e-02	1.58e+03	1.99e+03	1.78e+03	23.0	n/a	221.0	n/a
S96T005113	F	Copper -ICP-Fusion	ug/g	None	None	100.4	<1.00e-02	<2.20e+02	<2.25e2	n/a	n/a	n/a	221.0	n/a
S96T005113	F	Iron -ICP-Fusion	ug/g	None	None	101.4	<5.00e-02	6.55e+03	8.67e+03	7.61e+03	27.9	n/a	1.10e+03	n/a
S96T005113	F	Lanthanum -ICP-Fusion	ug/g	None	None	101.4	<5.00e-02	<1.10e+03	<1.13e3	n/a	n/a	n/a	1.10e+03	n/a
S96T005113	F	Lithium -ICP-Fusion	ug/g	None	None	100.6	<1.00e-02	<2.20e+02	260.0	n/a	n/a	n/a	221.0	n/a
S96T005113	F	Magnesium -ICP-Fusion	ug/g	None	None	101.0	<1.00e-01	<2.20e+03	<2.25e3	n/a	n/a	n/a	2.21e+03	n/a
S96T005113	F	Manganese -ICP-Fusion	ug/g	None	None	101.0	<1.00e-02	1.65e+03	2.31e+03	1.98e+03	33.3	n/a	221.0	n/a
S96T005113	F	Molybdenum -ICP-Fusion	ug/g	None	None	102.4	<5.00e-02	<1.10e+03	<1.13e3	n/a	n/a	n/a	1.10e+03	n/a
S96T005113	F	Sodium -ICP-Fusion	ug/g	None	None	100.4	2.130	1.59e+05	1.40e+05	1.50e+05	12.7	n/a	2.21e+03	n/a
S96T005113	F	Neodymium -ICP-Fusion	ug/g	None	None	102.0	<1.00e-01	<2.20e+03	<2.25e3	n/a	n/a	n/a	2.21e+03	n/a
S96T005113	F	Nickel -ICP-Fusion	ug/g	None	None	101.4	9.80e-02	6.07e+03	6.55e+03	6.31e+03	7.61	n/a	443.0	n/a
S96T005113	F	Phosphorus -ICP-Fusion	ug/g	None	None	108.4	<2.00e-01	3.92e+04	2.81e+04	3.36e+04	33.0	n/a	4.43e+03	n/a
S96T005113	F	Lead -ICP-Fusion	ug/g	None	None	102.4	<1.00e-01	<2.20e+03	<2.25e3	n/a	n/a	n/a	2.21e+03	n/a
S96T005113	F	Sulfur -ICP-Fusion	ug/g	None	None	103.0	<1.00e-01	<2.20e+03	<2.25e3	n/a	n/a	n/a	2.21e+03	n/a
S96T005113	F	Antimony -ICP-Fusion	ug/g	None	None	95.20	<6.00e-02	<1.32e+03	<1.35e3	n/a	n/a	n/a	1.32e+03	n/a
S96T005113	F	Selenium -ICP-Fusion	ug/g	None	None	103.6	<1.00e-01	<2.20e+03	<2.25e3	n/a	n/a	n/a	2.21e+03	n/a
S96T005113	F	Silicon -ICP-Fusion	ug/g	None	None	101.6	<5.00e-02	1.95e+04	2.48e+04	2.22e+04	23.9	n/a	1.10e+03	n/a
S96T005113	F	Samarium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-01	<2.20e+03	<2.25e3	n/a	n/a	n/a	2.21e+03	n/a
S96T005113	F	Strontium -ICP-Fusion	ug/g	None	None	101.2	<1.00e-02	<2.20e+02	<2.25e2	n/a	n/a	n/a	221.0	n/a
S96T005113	F	Titanium -ICP-Fusion	ug/g	None	None	98.00	<1.00e-02	3.34e+02	432.0	383.0	25.6	n/a	221.0	n/a
S96T005113	F	Thallium -ICP-Fusion	ug/g	None	None	95.80	<2.00e-01	<4.41e+03	<4.51e3	n/a	n/a	n/a	4.43e+03	n/a
S96T005113	F	Uranium -ICP-Fusion	ug/g	None	None	98.20	<5.00e-01	2.42e+04	3.66e+04	3.04e+04	40.8	n/a	1.10e+04	n/a
S96T005113	F	Vanadium -ICP-Fusion	ug/g	None	None	102.6	<5.00e-02	<1.10e+03	<1.13e3	n/a	n/a	n/a	1.10e+03	n/a
S96T005113	F	Zinc -ICP-Fusion	ug/g	None	None	103.4	<1.00e-02	<2.20e+02	261.0	n/a	n/a	n/a	221.0	n/a
S96T005113	F	Zirconium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-02	<2.20e+02	<2.25e2	n/a	n/a	n/a	221.0	n/a
S96T005114	W	Fluoride-IC-Dionex 4000/4500	ug/g	None	None	100.0	<1.20e-02	1.06e+04	1.21e+04	1.13e+04	13.2	n/a	55.02	n/a
S96T005114	W	Chloride-IC-Dionex 4000/4500	ug/g	None	None	96.83	3.70e-02	2.00e+02	249.0	224.7	21.8	n/a	77.95	n/a

=> Limit violated
=> Selected Limit

Sample#	R	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
				Lower	Upper									
S96T005114	W	Nitrite-IC - Dionex 4000/4500	ug/g	None	None	95.55	<1.08e-01	2.79e+03	3.04e+03	2.91e+03	8.58	n/a	495.2	n/a
S96T005114	W	Bromide by Ion Chromatograph	ug/g	None	None	97.45	<1.25e-01	1.46e+03	1.53e+03	1.49e+03	4.68	n/a	573.1	n/a
S96T005114	W	Nitrate by IC-Dionex 4000/4500	ug/g	None	None	96.63	<1.39e-01	1.18e+04	1.20e+04	1.19e+04	1.68	n/a	637.4	n/a
S96T005114	W	Phosphate-IC-Dionex 4000/4500	ug/g	None	None	98.53	<1.20e-01	1.02e+05	1.15e+05	1.09e+05	12.0	n/a	550.2	n/a
S96T005114	W	Sulfate by IC-Dionex 4000/4500	ug/g	None	None	96.67	<1.38e-01	<6.33e+02	<6.20e2	n/a	n/a	n/a	632.7	n/a
S96T005114	W	Oxalate by IC-Dionex 4000/4500	ug/g	None	None	104.2	<1.05e-01	1.71e+04	1.17e+04	1.44e+04	37.5	n/a	481.5	n/a

=> Limit violated

=> Selected Limit

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WHE-SD-WM-DP-201, REV. 1

Table 1. Data Summary Table
B-109

CORE NUMBER: 169

SEGMENT #: 1

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005102			DSC Exotherm using Mettler	Joules/g	-1.0e+00	483.0	88.58	n/a	49.40	46.00	47.70	7.13	n/a	n/a	n/a
S96T005102			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	483.0	n/a	n/a	89.20	83.10	86.15	7.08	n/a	n/a	n/a
S96T005102			% Water by TGA using Mettler	%	-1.0e+00	None	98.82	n/a	44.45	44.79	44.62	0.76	n/a	n/a	n/a
S96T005102			TIC by Acid/Coulometry	ug/g	None	None	100.0	1.800	4.34e+03	4.80e+03	4.57e+03	10.1	108.2	5.000	n/a
S96T005102			TOC by Persulfate/Coulometry	ug/g	-1.0e+00	88.33	18.50	1.46e+03	1.46e+03	1.46e+03	0.00	83.40	80.00	n/a	n/a
S96T005103	F		Silver -ICP-Fusion	ug/g	None	None	101.2	<1.00e-02	<1.93e+02	<1.88e2	n/a	n/a	82.70	193.0	n/a
S96T005103	F		Aluminum -ICP-Fusion	ug/g	None	None	100.6	<5.00e-02	1.54e+04	2.87e+04	2.20e+04	60.3	104.0	964.0	n/a
S96T005103	F		Arsenic -ICP-Fusion	ug/g	None	None	104.4	<1.00e-01	<1.93e+03	<1.88e3	n/a	n/a	103.0	1.93e+03	n/a
S96T005103	F		Boron -ICP-Fusion	ug/g	None	None	102.0	<5.00e-02	<9.66e+02	<9.42e2	n/a	n/a	99.20	964.0	n/a
S96T005103	F		Barium -ICP-Fusion	ug/g	None	None	101.2	<5.00e-02	<9.66e+02	<9.42e2	n/a	n/a	103.0	964.0	n/a
S96T005103	F		Beryllium -ICP-Fusion	ug/g	None	None	103.0	<5.00e-03	<96.60	<9.42e1	n/a	n/a	101.0	96.40	n/a
S96T005103	F		Bismuth -ICP-Fusion	ug/g	None	None	106.4	<1.00e-01	<1.93e+03	<1.88e3	n/a	n/a	106.0	1.93e+03	n/a
S96T005103	F		Calcium -ICP-Fusion	ug/g	None	None	96.60	<1.00e-01	<1.93e+03	<1.88e3	n/a	n/a	96.70	1.93e+03	n/a
S96T005103	F		Cadmium -ICP-Fusion	ug/g	None	None	101.4	<5.00e-03	<96.60	<9.42e1	n/a	n/a	100.0	96.40	n/a
S96T005103	F		Cerium -ICP-Fusion	ug/g	None	None	105.2	<1.00e-01	<1.93e+03	<1.88e3	n/a	n/a	110.0	1.93e+03	n/a
S96T005103	F		Cobalt -ICP-Fusion	ug/g	None	None	103.0	<2.00e-02	<3.86e+02	<3.77e2	n/a	n/a	102.0	386.0	n/a
S96T005103	F		Chromium -ICP-Fusion	ug/g	None	None	101.8	<1.00e-02	4.77e+03	6.71e+03	5.74e+03	33.8	101.0	193.0	n/a
S96T005103	F		Copper -ICP-Fusion	ug/g	None	None	100.4	<1.00e-02	<1.93e+02	<1.88e2	n/a	n/a	103.0	193.0	n/a
S96T005103	F		Iron -ICP-Fusion	ug/g	None	None	101.4	<5.00e-02	6.99e+03	2.19e+04	1.44e+04	103	101.0	964.0	n/a
S96T005103	F		Lanthanum -ICP-Fusion	ug/g	None	None	101.4	<5.00e-02	<9.66e+02	<9.42e2	n/a	n/a	103.0	964.0	n/a
S96T005103	F		Lithium -ICP-Fusion	ug/g	None	None	100.6	<1.00e-02	<1.93e+02	<1.88e2	n/a	n/a	97.60	193.0	n/a
S96T005103	F		Magnesium -ICP-Fusion	ug/g	None	None	101.0	<1.00e-01	<1.93e+03	<1.88e3	n/a	n/a	98.20	1.93e+03	n/a
S96T005103	F		Manganese -ICP-Fusion	ug/g	None	None	101.0	<1.00e-02	2.70e+02	534.0	402.0	65.7	99.80	193.0	n/a
S96T005103	F		Molybdenum -ICP-Fusion	ug/g	None	None	102.4	<5.00e-02	<9.66e+02	<9.42e2	n/a	n/a	102.0	964.0	n/a
S96T005103	F		Sodium -ICP-Fusion	ug/g	None	None	100.4	2.130	2.17e+05	1.99e+05	2.08e+05	8.65	115.0	1.93e+03	n/a
S96T005103	F		Neodymium -ICP-Fusion	ug/g	None	None	102.0	<1.00e-01	<1.93e+03	<1.88e3	n/a	n/a	106.0	1.93e+03	n/a
S96T005103	F		Nickel -ICP-Fusion	ug/g	None	None	101.4	9.80e-02	2.16e+03	4.70e+03	3.43e+03	74.1	100.0	386.0	n/a
S96T005103	F		Phosphorus -ICP-Fusion	ug/g	None	None	108.4	<2.00e-01	6.90e+04	6.12e+04	6.51e+04	12.0	113.0	3.86e+03	n/a
S96T005103	F		Lead -ICP-Fusion	ug/g	None	None	102.4	<1.00e-01	<1.93e+03	<1.88e3	n/a	n/a	103.0	1.93e+03	n/a
S96T005103	F		Sulfur -ICP-Fusion	ug/g	None	None	103.0	<1.00e-01	<1.93e+03	<1.88e3	n/a	n/a	105.0	1.93e+03	n/a
S96T005103	F		Antimony -ICP-Fusion	ug/g	None	None	95.20	<6.00e-02	<1.16e+03	<1.13e3	n/a	n/a	94.80	1.16e+03	n/a
S96T005103	F		Selenium -ICP-Fusion	ug/g	None	None	103.6	<1.00e-01	<1.93e+03	<1.88e3	n/a	n/a	101.0	1.93e+03	n/a
S96T005103	F		Silicon -ICP-Fusion	ug/g	None	None	101.6	<5.00e-02	2.77e+03	6.25e+03	4.51e+03	77.2	102.0	964.0	n/a
S96T005103	F		Samarium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-01	<1.93e+03	<1.88e3	n/a	n/a	99.00	1.93e+03	n/a
S96T005103	F		Strontium -ICP-Fusion	ug/g	None	None	101.2	<1.00e-02	<1.93e+02	<1.88e2	n/a	n/a	103.0	193.0	n/a
S96T005103	F		Titanium -ICP-Fusion	ug/g	None	None	98.00	<1.00e-02	<1.93e+02	<1.88e2	n/a	n/a	98.80	193.0	n/a
S96T005103	F		Thallium -ICP-Fusion	ug/g	None	None	95.80	<2.00e-01	<3.86e+03	<3.77e3	n/a	n/a	104.0	3.86e+03	n/a
S96T005103	F		Uranium -ICP-Fusion	ug/g	None	None	98.20	<5.00e-01	<9.66e+03	<9.42e3	n/a	n/a	98.00	9.66e+03	n/a
S96T005103	F		Vanadium -ICP-Fusion	ug/g	None	None	102.6	<5.00e-02	<9.66e+02	<9.42e2	n/a	n/a	103.0	964.0	n/a
S96T005103	F		Zinc -ICP-Fusion	ug/g	None	None	103.4	<1.00e-02	<1.93e+02	<1.88e2	n/a	n/a	101.0	193.0	n/a
S96T005103	F		Zirconium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-02	<1.93e+02	<1.88e2	n/a	n/a	101.0	193.0	n/a
S96T005103	F		Alpha of Digested Solid	ug/g	-1.0e+00	88.33	<2.45e-03	6.47e-02	7.95e-02	7.21e-02	20.5	53.76	3.00e-03	1.50E+01	n/a
S96T005104	W		Fluoride-IC-Dionex 4000/4500	ug/g	None	None	100.0	<1.20e-02	5.46e+03	7.19e+03	6.32e+03	27.4	102.0	34.20	n/a

=> Limit violated

=> Selected Limit

WHS-SD-WM-DP-201, REV.1

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S96T005104	W		Chloride-IC-Dionex 4000/4500	ug/g	None	None	96.83	3.70e-02	6.55e+02	620.0	637.6	5.49	102.3	76.78	n/a	
S96T005104	W		Nitrite-IC - Dionex 4000/4500	ug/g	None	None	95.55	<1.08e-01	9.80e+03	9.57e+03	9.68e+03	2.37	97.03	487.8	n/a	
S96T005104	W		Bromide by Ion Chromatograph	ug/g	None	None	97.45	<1.25e-01	<5.64e+02	<5.58e2	n/a	n/a	94.91	564.5	n/a	
S96T005104	W		Nitrate by IC-Dionex 4000/4500	ug/g	None	None	96.63	<1.39e-01	2.48e+04	2.33e+04	2.40e+04	6.24	98.32	627.7	n/a	
S96T005104	W		Phosphate-IC-Dionex 4000/4500	ug/g	None	None	98.53	<1.20e-01	1.94e+05	2.07e+05	2.01e+05	6.48	71.32	542.0	n/a	
S96T005104	W		Sulfate by IC-Dionex 4000/4500	ug/g	None	None	96.67	<1.38e-01	8.39e+02	800.0	819.5	4.76	96.51	623.3	n/a	
S96T005104	W		Oxalate by IC-Dionex 4000/4500	ug/g	None	None	104.2	<1.05e-01	1.04e+03	1.63e+03	1.34e+03	44.2	105.7	474.2	n/a	

=> Limit violated

=> Selected Limit

Table 1. Data Summary Table
B-109

CORE NUMBER: 169

SEGMENT #: 2

SEGMENT PORTION: L Lower Half of Segment

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
				Lower	Upper									
S96T005107		Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.850	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T005108		DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	88.58	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005108		DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005108		% Water by TGA using Mettler	%	None	None	98.82	n/a	65.41	43.79	54.60	39.6	n/a	n/a	n/a
S96T005108	1	% Water by TGA using Mettler	%	None	None	99.64	n/a	44.81	46.80	45.80	4.34	n/a	n/a	n/a
S96T005108		TIC by Acid/Coulometry	ug/g	None	None	100.0	1.800	2.27e+03	2.39e+03	2.33e+03	5.15	97.90	5.000	n/a
S96T005108		TIC by Persulfate/Coulometry	ug/g	-1.0e+00	33.0e+04	88.33	18.50	2.26e+03	2.39e+03	2.32e+03	5.59	117.4	80.00	n/a
S96T005109	F	Silver -ICP-Fusion	ug/g	None	None	101.2	<1.00e-02	<2.13e+02	<2.02e2	n/a	n/a	81.90	214.0	n/a
S96T005109	F	Aluminum -ICP-Fusion	ug/g	None	None	100.6	<5.00e-01	1.22e+05	1.24e+05	1.23e+05	1.63	96.30	1.07e+03	n/a
S96T005109	F	Arsenic -ICP-Fusion	ug/g	None	None	104.4	<1.00e-01	<2.13e+03	<2.02e3	n/a	n/a	104.0	2.14e+03	n/a
S96T005109	F	Boron -ICP-Fusion	ug/g	None	None	102.0	<5.00e-02	<1.07e+03	<1.01e3	n/a	n/a	101.0	1.07e+03	n/a
S96T005109	F	Barium -ICP-Fusion	ug/g	None	None	101.2	<5.00e-02	<1.07e+03	<1.01e3	n/a	n/a	103.0	1.07e+03	n/a
S96T005109	F	Beryllium -ICP-Fusion	ug/g	None	None	103.0	<5.00e-03	<1.07e+02	<1.01e2	n/a	n/a	102.0	107.0	n/a
S96T005109	F	Bismuth -ICP-Fusion	ug/g	None	None	106.4	<1.00e-01	<2.13e+03	<2.02e3	n/a	n/a	113.0	2.14e+03	n/a
S96T005109	F	Calcium -ICP-Fusion	ug/g	None	None	96.60	<1.00e-01	<2.13e+03	<2.02e3	n/a	n/a	103.0	2.14e+03	n/a
S96T005109	F	Cadmium -ICP-Fusion	ug/g	None	None	101.4	<5.00e-03	<1.07e+02	<1.01e2	n/a	n/a	102.0	107.0	n/a
S96T005109	F	Cerium -ICP-Fusion	ug/g	None	None	105.2	<1.00e-01	<2.13e+03	<2.02e3	n/a	n/a	102.0	2.14e+03	n/a
S96T005109	F	Cobalt -ICP-Fusion	ug/g	None	None	103.0	<2.00e-02	<4.27e+02	<4.04e2	n/a	n/a	103.0	426.0	n/a
S96T005109	F	Chromium -ICP-Fusion	ug/g	None	None	101.8	<1.00e-02	2.40e+03	2.77e+03	2.58e+03	14.3	102.0	214.0	n/a
S96T005109	F	Copper -ICP-Fusion	ug/g	None	None	100.4	<1.00e-02	<2.13e+02	<2.02e2	n/a	n/a	103.0	214.0	n/a
S96T005109	F	Iron -ICP-Fusion	ug/g	None	None	101.4	<5.00e-02	2.51e+03	2.82e+03	2.66e+03	11.6	102.0	1.07e+03	n/a
S96T005109	F	Lanthanum -ICP-Fusion	ug/g	None	None	101.4	<5.00e-02	<1.07e+03	<1.01e3	n/a	n/a	104.0	2.14e+03	n/a
S96T005109	F	Lithium -ICP-Fusion	ug/g	None	None	100.6	<1.00e-02	<2.13e+02	<2.02e2	n/a	n/a	96.60	214.0	n/a
S96T005109	F	Magnesium -ICP-Fusion	ug/g	None	None	101.0	<1.00e-01	<2.13e+03	<2.02e3	n/a	n/a	101.0	2.14e+03	n/a
S96T005109	F	Manganese -ICP-Fusion	ug/g	None	None	100.0	<1.00e-02	5.38e+02	638.0	588.0	17.0	102.0	214.0	n/a
S96T005109	F	Molybdenum -ICP-Fusion	ug/g	None	None	102.4	<5.00e-02	<1.07e+03	<1.01e3	n/a	n/a	103.0	1.07e+03	n/a
S96T005109	F	Sodium -ICP-Fusion	ug/g	None	None	100.4	2.130	1.48e+05	1.38e+05	1.43e+05	6.99	89.40	2.14e+03	n/a
S96T005109	F	Neodymium -ICP-Fusion	ug/g	None	None	102.0	<1.00e-01	<2.13e+03	<2.02e3	n/a	n/a	105.0	2.14e+03	n/a
S96T005109	F	Nickel -ICP-Fusion	ug/g	None	None	101.4	9.80e-02	1.07e+03	1.25e+03	1.16e+03	15.5	102.0	426.0	n/a
S96T005109	F	Phosphorus -ICP-Fusion	ug/g	None	None	108.4	<2.00e-01	2.41e+04	1.82e+04	2.12e+04	27.9	108.0	4.26e+03	n/a
S96T005109	F	Lead -ICP-Fusion	ug/g	None	None	102.4	<1.00e-01	<2.13e+03	<2.02e3	n/a	n/a	106.0	2.14e+03	n/a
S96T005109	F	Sulfur -ICP-Fusion	ug/g	None	None	103.0	<1.00e-01	<2.13e+03	<2.02e3	n/a	n/a	105.0	2.14e+03	n/a
S96T005109	F	Antimony -ICP-Fusion	ug/g	None	None	95.20	<6.00e-02	<1.28e+03	<1.21e3	n/a	n/a	97.40	1.28e+03	n/a
S96T005109	F	Selenium -ICP-Fusion	ug/g	None	None	103.6	<1.00e-01	<2.13e+03	<2.02e3	n/a	n/a	103.0	2.14e+03	n/a
S96T005109	F	Silicon -ICP-Fusion	ug/g	None	None	101.6	<5.00e-02	6.54e+03	5.03e+03	4.78e+03	10.2	104.0	1.07e+03	n/a
S96T005109	F	Samarium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-01	<2.13e+03	<2.02e3	n/a	n/a	103.0	2.14e+03	n/a
S96T005109	F	Strontium -ICP-Fusion	ug/g	None	None	101.2	<1.00e-02	<2.13e+02	<2.02e2	n/a	n/a	104.0	214.0	n/a
S96T005109	F	Titanium -ICP-Fusion	ug/g	None	None	98.00	<1.00e-02	<2.13e+02	<2.02e2	n/a	n/a	100.0	214.0	n/a
S96T005109	F	Thallium -ICP-Fusion	ug/g	None	None	95.80	<2.00e-01	<6.27e+03	<4.04e3	n/a	n/a	97.50	4.26e+03	n/a
S96T005109	F	Uranium -ICP-Fusion	ug/g	None	None	98.20	<5.00e-01	2.41e+04	2.86e+04	2.64e+04	17.1	113.0	1.07e+04	n/a
S96T005109	F	Vanadium -ICP-Fusion	ug/g	None	None	102.6	<5.00e-02	<1.07e+03	<1.01e3	n/a	n/a	104.0	1.07e+03	n/a
S96T005109	F	Zinc -ICP-Fusion	ug/g	None	None	103.4	<1.00e-02	<2.13e+02	<2.02e2	n/a	n/a	103.0	214.0	n/a
S96T005109	F	Zirconium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-02	<2.13e+02	<2.02e2	n/a	n/a	103.0	214.0	n/a

=> Limit violated

=> Selected Limit

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005109	F		Alpha of Digested Solid	uCi/g	-1.0e+00	31.60	88.31	<2.45e-03	1.17e-01	1.36e-01	1.27e-01	15.0	63.23	4.00e-03	1.17E+01
S96T005110	W		Fluoride-IC-Dionex 4000/4500	ug/g	None	None	100.0	<1.20e-02	6.17e+03	6.56e+03	6.37e+03	6.13	n/a	49.98	n/a
S96T005110	W		Chloride-IC-Dionex 4000/4500	ug/g	None	None	96.83	3.70e-02	9.29e+02	796.0	862.7	15.4	n/a	70.81	n/a
S96T005110	W		Nitrite-IC - Dionex 4000/4500	ug/g	None	None	95.55	<1.08e-01	1.28e+04	1.13e+04	1.20e+04	12.4	n/a	449.8	n/a
S96T005110	W		Bromide by Ion Chromatograph	ug/g	None	None	97.45	<1.25e-01	<5.21e+02	<5.27e2	n/a	n/a	n/a	520.6	n/a
S96T005110	W		Nitrate by IC-Dionex 4000/4500	ug/g	None	None	96.63	<1.39e-01	6.90e+04	5.96e+04	6.43e+04	14.6	n/a	579.0	n/a
S96T005110	W		Phosphate-IC-Dionex 4000/4500	ug/g	None	None	98.53	<1.20e-01	5.55e+04	5.94e+04	5.75e+04	6.79	n/a	499.8	n/a
S96T005110	W		Sulfate by IC-Dionex 4000/4500	ug/g	None	None	96.67	<1.38e-01	2.19e+03	1.72e+03	1.96e+03	24.0	n/a	574.8	n/a
S96T005110	W		Oxalate by IC-Dionex 4000/4500	ug/g	None	None	104.2	<1.05e-01	9.43e+03	9.40e+03	9.41e+03	0.32	n/a	437.4	n/a

=> Limit violated

=> Selected Limit

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WME
WME-SD-WM-DP-201, REV. 1

Table 1. Data Summary Table
B-109

CORE NUMBER: 170

SEGMENT #: Field Blank

SEGMENT PORTION: Field Blank

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
				Lower	Upper										
S96T005116		DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	97.36	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S96T005116		DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S96T005116		Specific Gravity	Sp.G.	None	None	99.53	n/a	9.90e-01	1.002	9.96e-01	1.20	n/a	1.00e-03	n/a	n/a
S96T005116		% Water by TGA using Mettler	%	None	None	99.93	n/a	1.02e+02	100.0	101.0	1.98	n/a	n/a	n/a	n/a
S96T005116		TIC by Acid/Coulometry	ug/mL	None	None	93.19	1.900	12.20	11.60	11.90	5.04	98.30	5.000	n/a	n/a
S96T005116		TOC by Persulfate/Coulometry	ug/mL	-1.0e+00	3.0e+04	90.00	3.600	< 40.00	< 4.00e+1	n/a	n/a	90.90	40.00	n/a	n/a
S96T005116	D	Silver-ICP-Acid Dil.	ug/mL	None	None	99.20	<1.00e-02	<1.30e-01	<1.30e-1	n/a	n/a	n/a	1.30e-01	n/a	n/a
S96T005116	D	Aluminum-ICP-Acid Dil.	ug/mL	None	None	96.20	<5.00e-02	<6.50e-01	<6.50e-1	n/a	n/a	n/a	6.50e-01	n/a	n/a
S96T005116	D	Arsenic-ICP-Acid Dil.	ug/mL	None	None	102.4	<1.00e-01	< 1.300	<1.30e0	n/a	n/a	n/a	1.300	n/a	n/a
S96T005116	D	Boron-ICP-Acid Dil.	ug/mL	None	None	97.40	<5.00e-02	2.200	1.910	2.055	14.1	n/a	6.50e-01	n/a	n/a
S96T005116	D	Barium-ICP-Acid Dil.	ug/mL	None	None	97.00	<5.00e-02	<6.50e-01	<6.50e-1	n/a	n/a	n/a	6.50e-01	n/a	n/a
S96T005116	D	Beryllium-ICP-Acid Dil.	ug/mL	None	None	101.0	<5.00e-03	<6.50e-02	<6.50e-2	n/a	n/a	n/a	6.50e-02	n/a	n/a
S96T005116	D	Bismuth-ICP-Acid Dil.	ug/mL	None	None	99.40	<1.00e-01	< 1.300	<1.30e0	n/a	n/a	n/a	1.300	n/a	n/a
S96T005116	D	Calcium-ICP-Acid Dil.	ug/mL	None	None	101.4	<1.00e-01	20.20	18.30	19.25	9.87	n/a	1.300	n/a	n/a
S96T005116	D	Cadmium-ICP-Acid Dil.	ug/mL	None	None	100.8	<5.00e-03	<6.50e-02	<6.50e-2	n/a	n/a	n/a	6.50e-02	n/a	n/a
S96T005116	D	Cerium-ICP-Acid Dil.	ug/mL	None	None	98.20	<1.00e-01	< 1.300	<1.30e0	n/a	n/a	n/a	1.300	n/a	n/a
S96T005116	D	Cobalt-ICP-Acid Dil.	ug/mL	None	None	101.4	<2.00e-02	<2.60e-01	<2.60e-1	n/a	n/a	n/a	2.60e-01	n/a	n/a
S96T005116	D	Chromium-ICP-Acid Dil.	ug/mL	None	None	101.2	<1.00e-02	<1.30e-01	<1.30e-1	n/a	n/a	n/a	1.30e-01	n/a	n/a
S96T005116	D	Copper-ICP-Acid Dil.	ug/mL	None	None	101.8	<1.00e-02	<1.30e-01	<1.30e-1	n/a	n/a	n/a	1.30e-01	n/a	n/a
S96T005116	D	Iron-ICP-Acid Dil.	ug/mL	None	None	100.0	<5.00e-02	<6.50e-01	<6.50e-1	n/a	n/a	n/a	6.50e-01	n/a	n/a
S96T005116	D	Lanthanum-ICP-Acid Dil.	ug/mL	None	None	99.60	<5.00e-02	<6.50e-01	<6.50e-1	n/a	n/a	n/a	6.50e-01	n/a	n/a
S96T005116	D	Lithium-ICP-Acid Dil.	ug/mL	None	None	97.20	<1.00e-02	<1.30e-01	<1.30e-1	n/a	n/a	n/a	1.30e-01	n/a	n/a
S96T005116	D	Magnesium-ICP-Acid Dil.	ug/mL	None	None	94.80	<1.00e-01	4.160	3.710	3.935	11.4	n/a	1.300	n/a	n/a
S96T005116	D	Manganese-ICP-Acid Dil.	ug/mL	None	None	97.60	<1.00e-02	<1.30e-01	<1.30e-1	n/a	n/a	n/a	1.30e-01	n/a	n/a
S96T005116	D	Molybdenum-ICP-Acid Dil.	ug/mL	None	None	100.8	<5.00e-02	<6.50e-01	<6.50e-1	n/a	n/a	n/a	6.50e-01	n/a	n/a
S96T005116	D	Sodium-ICP-Acid Dil.	ug/mL	None	None	95.60	<1.00e-01	5.870	5.140	5.505	13.3	n/a	1.300	n/a	n/a
S96T005116	D	Neodymium-ICP-Acid Dil.	ug/mL	None	None	99.80	<1.00e-01	< 1.300	<1.30e0	n/a	n/a	n/a	1.300	n/a	n/a
S96T005116	D	Nickel-ICP-Acid Dil.	ug/mL	None	None	100.2	<2.00e-02	<2.60e-01	<2.60e-1	n/a	n/a	n/a	2.60e-01	n/a	n/a
S96T005116	D	Phosphorus-ICP-Acid Dil.	ug/mL	None	None	98.20	<2.00e-01	< 2.600	<2.60e0	n/a	n/a	n/a	2.600	n/a	n/a
S96T005116	D	Lead-ICP-Acid Dil.	ug/mL	None	None	101.2	<1.00e-01	< 1.300	<1.30e0	n/a	n/a	n/a	1.300	n/a	n/a
S96T005116	D	Sulfur-ICP-Acid Dil.	ug/mL	None	None	98.80	<1.00e-01	15.00	14.30	14.65	4.78	n/a	1.300	n/a	n/a
S96T005116	D	Antimony-ICP-Acid Dil.	ug/mL	None	None	95.60	<6.00e-02	<7.80e-01	<7.80e-1	n/a	n/a	n/a	7.80e-01	n/a	n/a
S96T005116	D	Selenium-ICP-Acid Dil.	ug/mL	None	None	96.60	<1.00e-01	< 1.300	<1.30e0	n/a	n/a	n/a	1.300	n/a	n/a
S96T005116	D	Silicon-ICP-Acid Dil.	ug/mL	None	None	98.60	<5.00e-02	7.940	7.080	7.510	11.5	n/a	6.50e-01	n/a	n/a
S96T005116	D	Samarium-ICP-Acid Dil.	ug/mL	None	None	95.80	<1.00e-01	< 1.300	<1.30e0	n/a	n/a	n/a	1.300	n/a	n/a
S96T005116	D	Strontium-ICP-Acid Dil.	ug/mL	None	None	97.00	<1.00e-02	<1.30e-01	<1.30e-1	n/a	n/a	n/a	1.30e-01	n/a	n/a
S96T005116	D	Titanium-ICP-Acid Dil.	ug/mL	None	None	96.60	<1.00e-02	<1.30e-01	<1.30e-1	n/a	n/a	n/a	1.30e-01	n/a	n/a
S96T005116	D	Thallium-ICP-Acid Dil.	ug/mL	None	None	96.20	<2.00e-01	< 2.600	<2.60e0	n/a	n/a	n/a	2.600	n/a	n/a
S96T005116	D	Uranium-ICP-Acid Dil.	ug/mL	None	None	94.30	<5.00e-01	< 6.500	<6.50e0	n/a	n/a	n/a	6.500	n/a	n/a
S96T005116	D	Vanadium-ICP-Acid Dil.	ug/mL	None	None	100.4	<5.00e-02	<6.50e-01	<6.50e-1	n/a	n/a	n/a	6.50e-01	n/a	n/a
S96T005116	D	Zinc-ICP-Acid Dil.	ug/mL	None	None	102.2	<1.00e-02	7.22e-01	7.24e-01	7.23e-01	0.28	n/a	1.30e-01	n/a	n/a
S96T005116	D	Zirconium-ICP-Acid Dil.	ug/mL	None	None	98.00	<1.00e-02	<1.30e-01	<1.30e-1	n/a	n/a	n/a	1.30e-01	n/a	n/a
S96T005116		Fluoride-IC-Dionex 4000/4500	ug/mL	None	None	104.6	<1.20e-02	<7.20e-02	<7.20e-2	n/a	n/a	104.4	7.20e-02	n/a	n/a

=> Limit violated

=> Selected Limit

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005116			Chloride-IC-Dionex 4000/4500	ug/mL	None	None	101.3	<1.70e-02	8.003	8.070	8.037	0.87	98.10	1.02e-01	n/a
S96T005116			Nitrite-IC - Dionex 4000/4500	ug/mL	None	None	98.70	<1.08e-01	<6.48e-01	<6.48e-1	n/a	n/a	94.99	6.48e-01	n/a
S96T005116			Bromide by Ion Chromatograph	ug/mL	None	None	102.9	<1.25e-01	<7.50e-01	<7.50e-1	n/a	n/a	96.26	7.50e-01	n/a
S96T005116			Nitrate by IC-Dionex 4000/4500	ug/mL	None	None	103.4	<1.39e-01	1.311	1.400	1.355	6.64	96.46	8.34e-01	n/a
S96T005116			Phosphate-IC-Dionex 4000/4500	ug/mL	None	None	101.8	<1.20e-01	<7.20e-01	<7.20e-1	n/a	n/a	95.77	7.20e-01	n/a
S96T005116			Sulfate by IC-Dionex 4000/4500	ug/mL	None	None	104.1	<1.38e-01	16.34	16.20	16.27	0.62	97.62	8.28e-01	n/a
S96T005116			Oxalate by IC-Dionex 4000/4500	ug/mL	None	None	108.0	<1.05e-01	<6.30e-01	1.520	n/a	n/a	104.0	6.30e-01	n/a
S96T005116			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	93.51	<5.34e-07	<9.93e-07	<6.60E-7	n/a	n/a	100.3	1.25e-06	5.00E+02

=> Limit violated

=> Selected Limit

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HMF
HMF-SD-WM-DP-201, REV. 1

Table 1. Data Summary Table
B-109CORE NUMBER: 170
SEGMENT #: HHF Blank

SEGMENT PORTION: Hydrostatic Head Fluid

Sample#	R	AW	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S96T004933	D		Silver-ICP-Acid Dil.	ug/mL	None	None	99.20	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a	n/a
S96T004933	D		Aluminum-ICP-Acid Dil.	ug/mL	None	None	96.20	<5.00e-02	<1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a	n/a
S96T004933	D		Arsenic-ICP-Acid Dil.	ug/mL	None	None	102.4	<1.00e-01	<2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a	n/a
S96T004933	D		Boron-ICP-Acid Dil.	ug/mL	None	None	97.40	<5.00e-02	<1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a	n/a
S96T004933	D		Barium-ICP-Acid Dil.	ug/mL	None	None	97.00	<5.00e-02	<1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a	n/a
S96T004933	D		Beryllium-ICP-Acid Dil.	ug/mL	None	None	101.0	<5.00e-03	<1.00e-01	<1.00e-1	n/a	n/a	n/a	1.00e-01	n/a	n/a
S96T004933	D		Bismuth-ICP-Acid Dil.	ug/mL	None	None	99.40	<1.00e-01	<2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a	n/a
S96T004933	D		Calcium-ICP-Acid Dil.	ug/mL	None	None	101.4	<1.00e-01	10.60	10.50	10.55	0.95	n/a	2.000	n/a	n/a
S96T004933	D		Cadmium-ICP-Acid Dil.	ug/mL	None	None	100.8	<5.00e-03	<1.00e-01	<1.00e-1	n/a	n/a	n/a	1.00e-01	n/a	n/a
S96T004933	D		Cerium-ICP-Acid Dil.	ug/mL	None	None	98.20	<1.00e-01	<2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a	n/a
S96T004933	D		Cobalt-ICP-Acid Dil.	ug/mL	None	None	101.4	<2.00e-02	<4.00e-01	<4.00e-1	n/a	n/a	n/a	4.00e-01	n/a	n/a
S96T004933	D		Chromium-ICP-Acid Dil.	ug/mL	None	None	101.2	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a	n/a
S96T004933	D		Copper-ICP-Acid Dil.	ug/mL	None	None	101.8	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a	n/a
S96T004933	D		Iron-ICP-Acid Dil.	ug/mL	None	None	100.0	<5.00e-02	<1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a	n/a
S96T004933	D		Lanthanum-ICP-Acid Dil.	ug/mL	None	None	99.60	<5.00e-02	<1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a	n/a
S96T004933	D		Lithium-ICP-Acid Dil.	ug/mL	None	None	97.20	<1.00e-02	1.87e+03	1.86e+03	1.86e+03	0.54	n/a	2.00e-01	n/a	n/a
S96T004933	D		Magnesium-ICP-Acid Dil.	ug/mL	None	None	94.80	<1.00e-01	<2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a	n/a
S96T004933	D		Manganese-ICP-Acid Dil.	ug/mL	None	None	97.60	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a	n/a
S96T004933	D		Molybdenum-ICP-Acid Dil.	ug/mL	None	None	100.8	<5.00e-02	<1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a	n/a
S96T004933	D		Sodium-ICP-Acid Dil.	ug/mL	None	None	95.60	<1.00e-01	23.00	23.00	23.00	0.00	n/a	2.000	n/a	n/a
S96T004933	D		Neodymium-ICP-Acid Dil.	ug/mL	None	None	99.80	<1.00e-01	<2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a	n/a
S96T004933	D		Nickel-ICP-Acid Dil.	ug/mL	None	None	100.2	<2.00e-02	<4.00e-01	<4.00e-1	n/a	n/a	n/a	4.00e-01	n/a	n/a
S96T004933	D		Phosphorus-ICP-Acid Dil.	ug/mL	None	None	98.20	<2.00e-01	<4.000	<4.00e0	n/a	n/a	n/a	4.000	n/a	n/a
S96T004933	D		Lead-ICP-Acid Dil.	ug/mL	None	None	101.2	<1.00e-01	<2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a	n/a
S96T004933	D		Sulfur-ICP-Acid Dil.	ug/mL	None	None	98.80	<1.00e-01	<2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a	n/a
S96T004933	D		Antimony-ICP-Acid Dil.	ug/mL	None	None	95.60	<6.00e-02	<1.200	<1.20e0	n/a	n/a	n/a	1.200	n/a	n/a
S96T004933	D		Selenium-ICP-Acid Dil.	ug/mL	None	None	96.60	<1.00e-01	<2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a	n/a
S96T004933	D		Silicon-ICP-Acid Dil.	ug/mL	None	None	98.60	<5.00e-02	59.40	59.50	59.45	0.17	n/a	1.000	n/a	n/a
S96T004933	D		Samarium-ICP-Acid Dil.	ug/mL	None	None	95.80	<1.00e-01	<2.000	<2.00e0	n/a	n/a	n/a	2.000	n/a	n/a
S96T004933	D		Strontium-ICP-Acid Dil.	ug/mL	None	None	97.00	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a	n/a
S96T004933	D		Titanium-ICP-Acid Dil.	ug/mL	None	None	96.60	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a	n/a
S96T004933	D		Thallium-ICP-Acid Dil.	ug/mL	None	None	96.20	<2.00e-01	<4.000	<4.00e0	n/a	n/a	n/a	4.000	n/a	n/a
S96T004933	D		Uranium-ICP-Acid Dil.	ug/mL	None	None	94.30	<5.00e-01	<10.00	<1.00e1	n/a	n/a	n/a	10.00	n/a	n/a
S96T004933	D		Vanadium-ICP-Acid Dil.	ug/mL	None	None	100.4	<5.00e-02	<1.000	<1.00e0	n/a	n/a	n/a	1.000	n/a	n/a
S96T004933	D		Zinc-ICP-Acid Dil.	ug/mL	None	None	102.2	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a	n/a
S96T004933	D		Zirconium-ICP-Acid Dil.	ug/mL	None	None	98.00	<1.00e-02	<2.00e-01	<2.00e-1	n/a	n/a	n/a	2.00e-01	n/a	n/a
S96T004933			Fluoride-IC-Dionex 4000/4500	ug/mL	None	None	101.5	<1.20e-02	<61.81	<6.18e1	n/a	n/a	n/a	61.81	n/a	n/a
S96T004933			Chloride-IC-Dionex 4000/4500	ug/mL	None	None	96.71	<1.70e-02	92.33	<8.76e1	n/a	n/a	n/a	87.57	n/a	n/a
S96T004933			Nitrite-IC-Dionex 4000/4500	ug/mL	None	None	95.55	<1.08e-01	<5.56e+02	<5.56e2	n/a	n/a	n/a	556.3	n/a	n/a
S96T004933			Bromide by Ion Chromatograph	ug/mL	None	None	97.96	<1.25e-01	2.14e+04	2.14e+04	2.14e+04	0.00	n/a	643.9	n/a	n/a
S96T004933			Nitrate by IC-Dionex 4000/4500	ug/mL	None	None	95.29	<1.39e-01	1.17e+03	<7.16e2	n/a	n/a	n/a	716.0	n/a	n/a
S96T004933			Phosphate-IC-Dionex 4000/4500	ug/mL	None	None	98.71	<1.20e-01	<6.18e+02	<6.18e2	n/a	n/a	n/a	618.1	n/a	n/a
S96T004933			Sulfate by IC-Dionex 4000/4500	ug/mL	None	None	100.2	<1.38e-01	<7.11e+02	781.0	n/a	n/a	n/a	710.8	n/a	n/a

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=> Limit violated
=> Selected Limit

A-0002-3

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S96T004933			Oxalate by IC-Dionex 4000/4500	ug/mL	None	None	102.7	<1.05e-01	<5.41e+02	<5.41e2	n/a	n/a	n/a	540.9		n/a

=> Limit violated

=> Selected Limit

Table 1. Data Summary Table
8-109

CORE NUMBER: 170

SEGMENT #: 1

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S96T005118			Bulk Density of Sample	g/mL	None	None	n/a	n/a	na	n/a	n/a	n/a	n/a	5.00e-01	n/a	n/a
S96T005119			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S96T005119			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	99.05	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S96T005119			% Water by TGA using Mettler	%	None	None	100.1	n/a	40.79	39.11	39.95	4.21	n/a	n/a	n/a	n/a
S96T005119			TIC by Acid/Coulometry	ug/g	None	None	99.83	1.100	6.02e+02	465.0	533.5	25.7	105.2	5.000	n/a	n/a
S96T005119			TIC by Persulfate/Coulometry	ug/g	-1.0e+00	3.0e+04	90.00	3.300	2.51e+02	271.0	261.0	7.66	93.90	80.00	n/a	n/a
S96T005121	F		Silver -ICP-Fusion	ug/g	None	None	97.60	<1.00e-02	<1.99e+02	<1.97e2	n/a	n/a	n/a	22.10	199.0	n/a
S96T005121	F		Aluminum -ICP-Fusion	ug/g	None	None	99.00	<5.00e-02	8.25e+04	8.13e+04	8.19e+04	1.47	97.00	996.0	n/a	n/a
S96T005121	F		Arsenic -ICP-Fusion	ug/g	None	None	100.2	<1.00e-01	<1.99e+03	<1.97e3	n/a	n/a	n/a	99.80	1.99e+03	n/a
S96T005121	F		Boron -ICP-Fusion	ug/g	None	None	101.6	<5.00e-02	<9.97e+02	<9.83e2	n/a	n/a	n/a	98.80	996.0	n/a
S96T005121	F		Barium -ICP-Fusion	ug/g	None	None	101.6	<5.00e-02	<9.97e+02	<9.83e2	n/a	n/a	n/a	102.0	996.0	n/a
S96T005121	F		Beryllium -ICP-Fusion	ug/g	None	None	102.8	<5.00e-03	< 99.70	<9.83e1	n/a	n/a	n/a	101.0	99.60	n/a
S96T005121	F		Bismuth -ICP-Fusion	ug/g	None	None	101.8	<1.00e-01	<1.99e+03	<1.97e3	n/a	n/a	n/a	103.0	1.99e+03	n/a
S96T005121	F		Calcium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-01	<1.99e+03	<1.97e3	n/a	n/a	n/a	100.0	1.99e+03	n/a
S96T005121	F		Cadmium -ICP-Fusion	ug/g	None	None	98.20	<5.00e-03	< 99.70	<9.83e1	n/a	n/a	n/a	97.60	99.60	n/a
S96T005121	F		Cerium -ICP-Fusion	ug/g	None	None	97.60	<1.00e-01	<1.99e+03	<1.97e3	n/a	n/a	n/a	96.30	1.99e+03	n/a
S96T005121	F		Cobalt -ICP-Fusion	ug/g	None	None	98.60	<2.00e-02	<3.99e+02	<3.93e2	n/a	n/a	n/a	98.00	399.0	n/a
S96T005121	F		Chromium -ICP-Fusion	ug/g	None	None	98.00	<1.00e-02	4.79e+02	437.0	458.0	9.17	98.00	199.0	n/a	n/a
S96T005121	F		Copper -ICP-Fusion	ug/g	None	None	104.2	<1.00e-02	<1.99e+02	<1.97e2	n/a	n/a	n/a	105.0	199.0	n/a
S96T005121	F		Iron -ICP-Fusion	ug/g	None	None	99.00	<5.00e-02	2.28e+03	2.09e+03	2.18e+03	8.70	98.90	996.0	n/a	n/a
S96T005121	F		Lanthanum -ICP-Fusion	ug/g	None	None	101.0	<5.00e-02	<9.97e+02	<9.83e2	n/a	n/a	n/a	102.0	996.0	n/a
S96T005121	F		Lithium -ICP-Fusion	ug/g	None	None	104.6	<1.00e-02	<1.99e+02	<1.97e2	n/a	n/a	n/a	98.60	199.0	n/a
S96T005121	F		Magnesium -ICP-Fusion	ug/g	None	None	96.40	<1.00e-01	<1.99e+03	<1.97e3	n/a	n/a	n/a	96.20	1.99e+03	n/a
S96T005121	F		Manganese -ICP-Fusion	ug/g	None	None	97.60	<1.00e-02	<1.99e+02	<1.97e2	n/a	n/a	n/a	98.50	199.0	n/a
S96T005121	F		Molybdenum -ICP-Fusion	ug/g	None	None	98.80	<5.00e-02	<9.97e+02	<9.83e2	n/a	n/a	n/a	98.30	996.0	n/a
S96T005121	F		Sodium -ICP-Fusion	ug/g	None	None	101.8	1.710	1.77e+05	1.81e+05	1.79e+05	2.23	109.0	1.99e+03	n/a	n/a
S96T005121	F		Neodymium -ICP-Fusion	ug/g	None	None	104.4	<1.00e-01	<1.99e+03	<1.97e3	n/a	n/a	n/a	105.0	1.99e+03	n/a
S96T005121	F		Nickel -ICP-Fusion	ug/g	None	None	97.00	1.69e-01	2.33e+03	5.74e+03	4.04e+03	84.5	97.10	399.0	n/a	n/a
S96T005121	F		Phosphorus -ICP-Fusion	ug/g	None	None	100.0	<2.00e-01	5.13e+04	5.28e+04	5.20e+04	2.88	93.60	3.99e+03	n/a	n/a
S96T005121	F		Lead -ICP-Fusion	ug/g	None	None	96.20	<1.00e-01	<1.99e+03	<1.97e3	n/a	n/a	n/a	97.30	1.99e+03	n/a
S96T005121	F		Sulfur -ICP-Fusion	ug/g	None	None	98.00	<1.00e-01	<1.99e+03	<1.97e3	n/a	n/a	n/a	100.0	1.99e+03	n/a
S96T005121	F		Antimony -ICP-Fusion	ug/g	None	None	96.20	<6.00e-02	<1.20e+03	<1.18e3	n/a	n/a	n/a	96.20	1.20e+03	n/a
S96T005121	F		Selenium -ICP-Fusion	ug/g	None	None	96.00	<1.00e-01	<1.99e+03	<1.97e3	n/a	n/a	n/a	95.70	1.99e+03	n/a
S96T005121	F		Silicon -ICP-Fusion	ug/g	None	None	94.00	<5.00e-02	1.05e+03	1.03e+03	1.04e+03	1.92	94.40	996.0	n/a	n/a
S96T005121	F		Samarium -ICP-Fusion	ug/g	None	None	102.2	<1.00e-01	<1.99e+03	<1.97e3	n/a	n/a	n/a	102.0	1.99e+03	n/a
S96T005121	F		Strontium -ICP-Fusion	ug/g	None	None	99.40	<1.00e-02	<1.99e+02	<1.97e2	n/a	n/a	n/a	101.0	199.0	n/a
S96T005121	F		Titanium -ICP-Fusion	ug/g	None	None	97.40	<1.00e-02	<1.99e+02	<1.97e2	n/a	n/a	n/a	97.50	199.0	n/a
S96T005121	F		Thallium -ICP-Fusion	ug/g	None	None	93.80	<2.00e-01	<3.99e+03	<3.93e3	n/a	n/a	n/a	94.10	3.99e+03	n/a
S96T005121	F		Uranium -ICP-Fusion	ug/g	None	None	102.0	<5.00e-01	<9.97e+03	<9.83e3	n/a	n/a	n/a	105.5	9.96e+03	n/a
S96T005121	F		Vanadium -ICP-Fusion	ug/g	None	None	100.2	<5.00e-02	<9.97e+02	<9.83e2	n/a	n/a	n/a	101.0	996.0	n/a
S96T005121	F		Zinc -ICP-Fusion	ug/g	None	None	100.0	2.30e-02	<1.99e+02	582.0	n/a	n/a	n/a	99.90	199.0	n/a
S96T005121	F		Zirconium -ICP-Fusion	ug/g	None	None	99.00	<1.00e-02	<1.99e+02	<1.97e2	n/a	n/a	n/a	101.0	199.0	n/a
S96T005121	F		Alpha of Digested Solid	uCi/g	-1.0e+00	31.60	104.3	<2.31e-03	2.20e-02	2.16e-02	2.18e-02	1.83	40.39	4.00e-03	2.47e+01	n/a

=> Limit violated

=> Selected Limit

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S96T005122	W		Fluoride-IC-Dionex 4000/4500	ug/g	None	None	99.83	<1.20e-02	1.16e+04	1.20e+04	1.18e+04	3.39	99.49	96.19		n/a
S96T005122	W		Chloride-IC-Dionex 4000/4500	ug/g	None	None	99.75	<1.70e-02	4.62e+02	409.0	435.3	12.2	101.4	136.3		n/a
S96T005122	W		Nitrite-IC-Dionex 4000/4500	ug/g	None	None	101.5	<1.08e-01	3.44e+03	3.21e+03	3.32e+03	6.92	100.7	865.5		n/a
S96T005122	W		Bromide by Ion Chromatograph	ug/g	None	None	102.5	<1.25e-01	<1.00e+03	<1.01e3	n/a	n/a	103.6	1.00e+03		n/a
S96T005122	W		Nitrate by IC-Dionex 4000/4500	ug/g	None	None	99.50	<1.39e-01	2.90e+04	2.64e+04	2.77e+04	9.39	104.7	1.11e+03		n/a
S96T005122	W		Phosphate-IC-Dionex 4000/4500	ug/g	None	None	98.71	<1.20e-01	1.59e+05	1.68e+05	1.64e+05	5.50	104.4	961.9		n/a
S96T005122	W		Sulfate by IC-Dionex 4000/4500	ug/g	None	None	101.3	<1.38e-01	1.36e+03	1.44e+03	1.40e+03	5.71	100.8	1.11e+03		n/a
S96T005122	W		Oxalate by IC-Dionex 4000/4500	ug/g	None	None	108.1	<1.05e-01	<8.42e+02	<8.45e2	n/a	n/a	109.8	841.7		n/a

=> Limit violated

=> Selected Limit

Table 1. Data Summary Table
8-109

CORE NUMBER: 170
SEGMENT #: 2

SEGMENT PORTION: A Top Quarter of Segment

Sample#	R A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
				Lower	Upper									
S96T005131		DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	483.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005131		DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	483.0	99.05	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005131		% Water by TGA using Mettler	%	None	None	100.1	n/a	44.45	44.25	44.55	1.35	n/a	n/a	n/a
S96T005131		TIC by Acid/Coulometry	ug/g	None	None	99.00	1.00e-01	5.17e+02	489.0	503.0	5.57	98.70	5.000	n/a
S96T005131		TOC by Persulfate/Coulometry	ug/g	-1.0e+00	1.0e+04	90.67	12.70	78.40	64.90	71.65	18.8	93.40	40.00	n/a
S96T005139	F	Silver -ICP-Fusion	ug/g	None	None	97.60	<1.00e-02	<1.97e+02	<1.95e2	n/a	n/a	n/a	197.0	n/a
S96T005139	F	Aluminium -ICP-Fusion	ug/g	None	None	99.00	<5.00e-02	3.79e+04	3.73e+04	3.76e+04	1.60	n/a	984.0	n/a
S96T005139	F	Arsenic -ICP-Fusion	ug/g	None	None	100.2	<1.00e-01	<1.97e+03	<1.95e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005139	F	Boron -ICP-Fusion	ug/g	None	None	101.6	<5.00e-02	<9.85e+02	<9.76e2	n/a	n/a	n/a	984.0	n/a
S96T005139	F	Barium -ICP-Fusion	ug/g	None	None	101.6	<5.00e-02	<9.85e+02	<9.76e2	n/a	n/a	n/a	984.0	n/a
S96T005139	F	Beryllium -ICP-Fusion	ug/g	None	None	102.8	<5.00e-03	<98.50	<9.76e1	n/a	n/a	n/a	98.40	n/a
S96T005139	F	Bismuth -ICP-Fusion	ug/g	None	None	101.8	<1.00e-01	<1.97e+03	<1.95e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005139	F	Calcium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-01	<1.97e+03	<1.95e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005139	F	Cadmium -ICP-Fusion	ug/g	None	None	98.20	<5.00e-03	<98.50	<9.76e1	n/a	n/a	n/a	98.40	n/a
S96T005139	F	Cerium -ICP-Fusion	ug/g	None	None	97.60	<1.00e-01	<1.97e+03	<1.95e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005139	F	Cobalt -ICP-Fusion	ug/g	None	None	97.60	<2.00e-02	<3.94e+02	<3.90e2	n/a	n/a	n/a	394.0	n/a
S96T005139	F	Chromium -ICP-Fusion	ug/g	None	None	98.00	<1.00e-02	2.91e+02	239.0	265.0	19.6	n/a	197.0	n/a
S96T005139	F	Copper -ICP-Fusion	ug/g	None	None	104.2	<1.00e-02	<1.97e+02	<1.95e2	n/a	n/a	n/a	197.0	n/a
S96T005139	F	Iron -ICP-Fusion	ug/g	None	None	99.00	<5.00e-02	<9.85e+02	<9.76e2	n/a	n/a	n/a	984.0	n/a
S96T005139	F	Lanthanum -ICP-Fusion	ug/g	None	None	101.0	<5.00e-02	<9.85e+02	<9.76e2	n/a	n/a	n/a	984.0	n/a
S96T005139	F	Lithium -ICP-Fusion	ug/g	None	None	104.6	<1.00e-02	<1.97e+02	<1.95e2	n/a	n/a	n/a	197.0	n/a
S96T005139	F	Magnesium -ICP-Fusion	ug/g	None	None	96.40	<1.00e-01	<1.97e+03	<1.95e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005139	F	Manganese -ICP-Fusion	ug/g	None	None	97.60	<1.00e-02	<1.97e+02	<1.95e2	n/a	n/a	n/a	197.0	n/a
S96T005139	F	Molybdenum -ICP-Fusion	ug/g	None	None	98.80	<5.00e-02	<9.85e+02	<9.76e2	n/a	n/a	n/a	984.0	n/a
S96T005139	F	Sodium -ICP-Fusion	ug/g	None	None	101.8	1.710	2.08e+05	2.16e+05	2.12e+05	3.77	n/a	1.97e+03	n/a
S96T005139	F	Neodymium -ICP-Fusion	ug/g	None	None	104.4	<1.00e-01	<1.97e+03	<1.95e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005139	F	Nickel -ICP-Fusion	ug/g	None	None	97.00	1.69e-01	2.19e+03	2.24e+03	2.22e+03	2.26	n/a	394.0	n/a
S96T005139	F	Phosphorus -ICP-Fusion	ug/g	None	None	100.0	<2.00e-01	5.76e+04	5.98e+04	5.87e+04	3.75	n/a	3.94e+03	n/a
S96T005139	F	Lead -ICP-Fusion	ug/g	None	None	96.20	<1.00e-01	<1.97e+03	<1.95e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005139	F	Sulfur -ICP-Fusion	ug/g	None	None	98.00	<1.00e-01	4.91e+03	4.70e+03	4.80e+03	4.37	n/a	1.97e+03	n/a
S96T005139	F	Antimony -ICP-Fusion	ug/g	None	None	96.20	<6.00e-02	<1.18e+03	<1.17e3	n/a	n/a	n/a	1.18e+03	n/a
S96T005139	F	Selenium -ICP-Fusion	ug/g	None	None	96.00	<1.00e-01	<1.97e+03	<1.95e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005139	F	Silicon -ICP-Fusion	ug/g	None	None	94.00	<5.00e-02	<9.85e+02	<9.76e2	n/a	n/a	n/a	984.0	n/a
S96T005139	F	Samarium -ICP-Fusion	ug/g	None	None	102.2	<1.00e-01	<1.97e+03	<1.95e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005139	F	Strontium -ICP-Fusion	ug/g	None	None	99.40	<1.00e-02	<1.97e+02	<1.95e2	n/a	n/a	n/a	197.0	n/a
S96T005139	F	Titanium -ICP-Fusion	ug/g	None	None	97.40	<1.00e-02	<1.97e+02	<1.95e2	n/a	n/a	n/a	197.0	n/a
S96T005139	F	Thallium -ICP-Fusion	ug/g	None	None	93.80	<2.00e-01	<3.94e+03	<3.90e3	n/a	n/a	n/a	3.94e+03	n/a
S96T005139	F	Uranium -ICP-Fusion	ug/g	None	None	102.0	<5.00e-01	<9.85e+03	<9.76e3	n/a	n/a	n/a	9.84e+03	n/a
S96T005139	F	Vanadium -ICP-Fusion	ug/g	None	None	100.2	<5.00e-02	<9.85e+02	<9.76e2	n/a	n/a	n/a	984.0	n/a
S96T005139	F	Zinc -ICP-Fusion	ug/g	None	None	100.0	2.30e-02	2.81e+02	236.0	258.5	17.4	n/a	197.0	n/a
S96T005139	F	Zirconium -ICP-Fusion	ug/g	None	None	99.00	<1.00e-02	<1.97e+02	<1.95e2	n/a	n/a	n/a	197.0	n/a
S96T005143	W	Fluoride-IC-Dionex 4000/4500	ug/g	None	None	99.83	<1.20e-02	2.53e+04	2.65e+04	2.59e+04	4.63	n/a	96.55	n/a
S96T005143	W	Chloride-IC-Dionex 4000/4500	ug/g	None	None	99.75	<1.70e-02	5.85e+02	586.0	584.4	0.51	n/a	136.8	n/a

=> Limit violated
=> Selected Limit

Sample#	R	AF	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005143	W		Nitrite-IC - Dionex 4000/4500	ug/g	None	None	101.5	<1.08e-01	2.81e+03	2.94e+03	2.88e+03	4.52	n/a	869.2	n/a
S96T005143	W		Bromide by Ion Chromatograph	ug/g	None	None	102.5	<1.25e-01	<1.01e+03	<1.02e3	n/a	n/a	n/a	1.01e+03	n/a
S96T005143	W		Nitrate by IC-Dionex 4000/4500	ug/g	None	None	99.50	<1.39e-01	4.85e+04	4.92e+04	4.88e+04	1.43	n/a	1.12e+03	n/a
S96T005143	W		Phosphate-IC-Dionex 4000/4500	ug/g	None	None	98.71	<1.20e-01	2.13e+05	2.17e+05	2.15e+05	1.86	n/a	965.6	n/a
S96T005143	W		Sulfate by IC-Dionex 4000/4500	ug/g	None	None	101.3	<1.38e-01	1.25e+04	1.29e+04	1.27e+04	3.15	n/a	1.11e+03	n/a
S96T005143	W		Oxalate by IC-Dionex 4000/4500	ug/g	None	None	108.1	<1.05e-01	<8.45e+02	<8.60e2	n/a	n/a	n/a	845.0	n/a

B Second Quarter of Segment: B Second Quarter of Segment

Sample#	R	AF	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005132			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	489.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005132			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	489.0	100.5	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005132			% Water by TGA on Perkin Elmer	%	None	None	98.89	n/a	43.63	49.35	46.49	12.3	n/a	n/a	n/a
S96T005132			TIC by Acid/Coulometry	ug/g	None	None	99.00	1.00e-01	2.02e+02	204.0	203.0	0.99	n/a	5.000	n/a
S96T005132			TOC by Persulfate/Coulometry	ug/g	-1.0e+00	3.0e+04	90.67	12.70	98.40	99.70	99.05	1.31	n/a	40.00	n/a
S96T005140	F		Silver -ICP-Fusion	ug/g	None	None	97.60	<1.00e-02	<1.97e+02	<2.00e2	n/a	n/a	n/a	197.0	n/a
S96T005140	F		Aluminum -ICP-Fusion	ug/g	None	None	99.00	<5.00e-02	3.10e+03	2.83e+03	2.96e+03	9.11	n/a	988.0	n/a
S96T005140	F		Arsenic -ICP-Fusion	ug/g	None	None	100.2	<1.00e-01	<1.97e+03	<2.00e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005140	F		Boron -ICP-Fusion	ug/g	None	None	101.6	<5.00e-02	<9.86e+02	<1.00e3	n/a	n/a	n/a	988.0	n/a
S96T005140	F		Barium -ICP-Fusion	ug/g	None	None	101.6	<5.00e-02	<9.86e+02	<1.00e3	n/a	n/a	n/a	988.0	n/a
S96T005140	F		Beryllium -ICP-Fusion	ug/g	None	None	102.8	<5.00e-03	< 98.60	<1.00e2	n/a	n/a	n/a	98.80	n/a
S96T005140	F		Bismuth -ICP-Fusion	ug/g	None	None	101.8	<1.00e-01	<1.97e+03	<2.00e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005140	F		Calcium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-01	<1.97e+03	<2.00e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005140	F		Cadmium -ICP-Fusion	ug/g	None	None	98.20	<5.00e-03	< 98.60	<1.00e2	n/a	n/a	n/a	98.80	n/a
S96T005140	F		Cerium -ICP-Fusion	ug/g	None	None	97.60	<1.00e-01	<1.97e+03	<2.00e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005140	F		Cobalt -ICP-Fusion	ug/g	None	None	98.60	<2.00e-02	<3.95e+02	<4.00e2	n/a	n/a	n/a	394.0	n/a
S96T005140	F		Chromium -ICP-Fusion	ug/g	None	None	98.00	<1.00e-02	2.56e+02	322.0	289.0	22.8	n/a	197.0	n/a
S96T005140	F		Copper -ICP-Fusion	ug/g	None	None	104.2	<1.00e-02	<1.97e+02	<2.00e2	n/a	n/a	n/a	197.0	n/a
S96T005140	F		Iron -ICP-Fusion	ug/g	None	None	99.00	<5.00e-02	<9.86e+02	<1.00e3	n/a	n/a	n/a	988.0	n/a
S96T005140	F		Lanthanum -ICP-Fusion	ug/g	None	None	101.0	<5.00e-02	<9.86e+02	<1.00e3	n/a	n/a	n/a	988.0	n/a
S96T005140	F		Lithium -ICP-Fusion	ug/g	None	None	104.6	<1.00e-02	<1.97e+02	<2.00e2	n/a	n/a	n/a	197.0	n/a
S96T005140	F		Magnesium -ICP-Fusion	ug/g	None	None	96.40	<1.00e-01	<1.97e+03	<2.00e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005140	F		Manganese -ICP-Fusion	ug/g	None	None	97.60	<1.00e-02	<1.97e+02	<2.00e2	n/a	n/a	n/a	197.0	n/a
S96T005140	F		Molybdenum -ICP-Fusion	ug/g	None	None	98.80	<5.00e-02	<9.86e+02	<1.00e3	n/a	n/a	n/a	988.0	n/a
S96T005140	F		Sodium -ICP-Fusion	ug/g	None	None	101.8	1.710	2.93e+05	2.76e+05	2.84e+05	5.98	n/a	1.97e+03	n/a
S96T005140	F		Neodymium -ICP-Fusion	ug/g	None	None	104.4	<1.00e-01	<1.97e+03	<2.00e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005140	F		Nickel -ICP-Fusion	ug/g	None	None	97.00	1.69e-01	3.00e+03	1.01e+03	2.00e+03	99.3	n/a	394.0	n/a
S96T005140	F		Phosphorus -ICP-Fusion	ug/g	None	None	100.0	<2.00e-01	1.17e+04	9.03e+03	1.04e+04	25.8	n/a	3.94e+03	n/a
S96T005140	F		Lead -ICP-Fusion	ug/g	None	None	96.20	<1.00e-01	<1.97e+03	<2.00e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005140	F		Sulfur -ICP-Fusion	ug/g	None	None	98.00	<1.00e-01	8.36e+04	8.29e+04	8.32e+04	0.84	n/a	1.97e+03	n/a
S96T005140	F		Antimony -ICP-Fusion	ug/g	None	None	96.20	<6.00e-02	<1.18e+03	<1.20e3	n/a	n/a	n/a	1.18e+03	n/a
S96T005140	F		Selenium -ICP-Fusion	ug/g	None	None	96.00	<1.00e-01	<1.97e+03	<2.00e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005140	F		Silicon -ICP-Fusion	ug/g	None	None	94.00	<5.00e-02	<9.86e+02	<1.00e3	n/a	n/a	n/a	988.0	n/a
S96T005140	F		Samarium -ICP-Fusion	ug/g	None	None	102.2	<1.00e-01	<1.97e+03	<2.00e3	n/a	n/a	n/a	1.97e+03	n/a
S96T005140	F		Strontium -ICP-Fusion	ug/g	None	None	99.40	<1.00e-02	<1.97e+02	<2.00e2	n/a	n/a	n/a	197.0	n/a
S96T005140	F		Titanium -ICP-Fusion	ug/g	None	None	97.40	<1.00e-02	<1.97e+02	<2.00e2	n/a	n/a	n/a	197.0	n/a
S96T005140	F		Thallium -ICP-Fusion	ug/g	None	None	93.80	<2.00e-01	<3.95e+03	<4.00e3	n/a	n/a	n/a	3.94e+03	n/a
S96T005140	F		Uranium -ICP-Fusion	ug/g	None	None	102.0	<5.00e-01	<9.86e+03	<1.00e4	n/a	n/a	n/a	9.88e+03	n/a
S96T005140	F		Vanadium -ICP-Fusion	ug/g	None	None	100.2	<5.00e-02	<9.86e+02	<1.00e3	n/a	n/a	n/a	988.0	n/a
S96T005140	F		Zinc -ICP-Fusion	ug/g	None	None	100.0	2.30e-02	<1.97e+02	436.0	n/a	n/a	n/a	197.0	n/a

=> Limit violated
=> Selected Limit

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005140	F		Zirconium -ICP-Fusion	ug/g	None	None	99.00	<1.00e-02	<1.97e+02	<2.00e2	n/a	n/a	n/a	197.0	n/a
S96T005144	W		Fluoride-IC-Dionex 4000/4500	ug/g	None	None	99.83	<1.20e-02	6.57e+04	6.31e+04	6.44e+04	4.04	n/a	240.3	n/a
S96T005144	W		Chloride-IC-Dionex 4000/4500	ug/g	None	None	99.75	<1.70e-02	9.68e+02	1.05e+03	1.01e+03	8.13	n/a	138.2	n/a
S96T005144	W		Nitrite-IC - Dionex 4000/4500	ug/g	None	None	101.5	<1.08e-01	4.94e+03	5.18e+03	5.06e+03	4.74	n/a	877.8	n/a
S96T005144	W		Bromide by Ion Chromatograph	ug/g	None	None	102.5	<1.25e-01	<1.02e+03	<1.03e3	n/a	n/a	n/a	1.02e+03	n/a
S96T005144	W		Nitrate by IC-Dionex 4000/4500	ug/g	None	None	99.50	<1.39e-01	1.19e+05	1.30e+05	1.25e+05	8.84	n/a	1.13e+03	n/a
S96T005144	W		Phosphate-IC-Dionex 4000/4500	ug/g	None	None	98.71	<1.20e-01	2.72e+04	2.95e+04	2.84e+04	8.11	n/a	975.4	n/a
S96T005144	W		Sulfate by IC-Dionex 4000/4500	ug/g	None	None	101.3	<1.38e-01	2.99e+05	2.88e+05	2.93e+05	3.75	n/a	2.76e+03	n/a
S96T005144	W		Oxalate by IC-Dionex 4000/4500	ug/g	None	None	108.1	<1.05e-01	<8.54e+02	<8.62e2	n/a	n/a	n/a	853.6	n/a

C Third Quarter of Segment: C Third Quarter of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005129			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.830	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T005135			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	440.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005135			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	440.0	100.5	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005135			% Water by TGA on Perkin Elmer	%	None	None	98.89	n/a	47.64	41.66	44.65	13.4	n/a	n/a	n/a
S96T005135			TIC by Acid/Coulometry	ug/g	None	None	100.5	1.400	3.37e+02	359.0	348.0	6.32	104.0	5.000	n/a
S96T005135			TOC by Persulfate/Coulometry	ug/g	-1.0e+00	3.0e+04	91.67	5.700	1.77e+02	195.0	186.0	9.68	94.70	40.00	n/a
S96T005141	F		Silver -ICP-Fusion	ug/g	None	None	97.40	<1.00e-02	<1.01e+02	<1.01e2	n/a	n/a	84.10	101.0	n/a
S96T005141	F		Aluminum -ICP-Fusion	ug/g	None	None	98.00	<5.00e-02	3.92e+03	5.79e+03	4.86e+03	38.5	100.0	506.0	n/a
S96T005141	F		Arsenic -ICP-Fusion	ug/g	None	None	100.0	<1.00e-01	<1.01e+03	<1.01e3	n/a	n/a	100.0	1.01e+03	n/a
S96T005141	F		Boron -ICP-Fusion	ug/g	None	None	100.8	<5.00e-02	<5.06e+02	<5.07e2	n/a	n/a	98.70	506.0	n/a
S96T005141	F		Barium -ICP-Fusion	ug/g	None	None	101.4	<5.00e-02	<5.06e+02	<5.07e2	n/a	n/a	101.0	506.0	n/a
S96T005141	F		Beryllium -ICP-Fusion	ug/g	None	None	102.6	<5.00e-03	< 50.60	<5.07e1	n/a	n/a	99.90	50.60	n/a
S96T005141	F		Bismuth -ICP-Fusion	ug/g	None	None	103.0	<1.00e-01	7.17e+03	8.15e+03	7.66e+03	12.8	107.0	1.01e+03	n/a
S96T005141	F		Calcium -ICP-Fusion	ug/g	None	None	99.00	<1.00e-01	<1.01e+03	<1.01e3	n/a	n/a	99.10	1.01e+03	n/a
S96T005141	F		Cadmium -ICP-Fusion	ug/g	None	None	98.00	<5.00e-03	< 50.60	<5.07e1	n/a	n/a	99.20	50.60	n/a
S96T005141	F		Cerium -ICP-Fusion	ug/g	None	None	99.40	<1.00e-01	<1.01e+03	<1.01e3	n/a	n/a	102.0	1.01e+03	n/a
S96T005141	F		Cobalt -ICP-Fusion	ug/g	None	None	98.20	<2.00e-02	<2.02e+02	<2.03e2	n/a	n/a	100.0	202.0	n/a
S96T005141	F		Chromium -ICP-Fusion	ug/g	None	None	97.40	<1.00e-02	3.53e+03	3.70e+03	3.62e+03	4.70	99.70	101.0	n/a
S96T005141	F		Copper -ICP-Fusion	ug/g	None	None	102.6	<1.00e-02	<1.01e+02	<1.01e2	n/a	n/a	103.0	101.0	n/a
S96T005141	F		Iron -ICP-Fusion	ug/g	None	None	99.40	<5.00e-02	1.41e+04	1.50e+04	1.46e+04	6.19	103.0	506.0	n/a
S96T005141	F		Lanthanum -ICP-Fusion	ug/g	None	None	100.6	<5.00e-02	<5.06e+02	<5.07e2	n/a	n/a	102.0	506.0	n/a
S96T005141	F		Lithium -ICP-Fusion	ug/g	None	None	99.80	<1.00e-02	<1.01e+02	<1.01e2	n/a	n/a	91.00	101.0	n/a
S96T005141	F		Magnesium -ICP-Fusion	ug/g	None	None	97.20	<1.00e-01	<1.01e+03	<1.01e3	n/a	n/a	98.50	1.01e+03	n/a
S96T005141	F		Manganese -ICP-Fusion	ug/g	None	None	97.40	<1.00e-02	<1.01e+02	<1.01e2	n/a	n/a	100.0	101.0	n/a
S96T005141	F		Molybdenum -ICP-Fusion	ug/g	None	None	98.40	<5.00e-02	<5.06e+02	<5.07e2	n/a	n/a	100.0	506.0	n/a
S96T005141	F		Sodium -ICP-Fusion	ug/g	None	None	97.60	3.200	2.16e+05	2.23e+05	2.20e+05	3.19	240.0	1.01e+03	n/a
S96T005141	F		Neodymium -ICP-Fusion	ug/g	None	None	104.8	<1.00e-01	<1.01e+03	<1.01e3	n/a	n/a	102.0	1.01e+03	n/a
S96T005141	F		Nickel -ICP-Fusion	ug/g	None	None	97.00	3.74e-01	5.28e+03	3.96e+03	4.62e+03	28.6	98.70	202.0	n/a
S96T005141	F		Phosphorus -ICP-Fusion	ug/g	None	None	100.4	<2.00e-01	2.61e+04	2.47e+04	2.54e+04	5.51	113.0	2.02e+03	n/a
S96T005141	F		Lead -ICP-Fusion	ug/g	None	None	96.00	<1.00e-01	<1.01e+03	<1.01e3	n/a	n/a	106.0	1.01e+03	n/a
S96T005141	F		Sulfur -ICP-Fusion	ug/g	None	None	98.20	<1.00e-01	4.07e+04	4.37e+04	4.22e+04	7.11	107.0	1.01e+05	n/a
S96T005141	F		Antimony -ICP-Fusion	ug/g	None	None	97.00	<6.00e-02	<6.07e+02	<6.08e2	n/a	n/a	101.0	608.0	n/a
S96T005141	F		Selenium -ICP-Fusion	ug/g	None	None	95.20	<1.00e-01	<1.01e+03	<1.01e3	n/a	n/a	97.90	1.01e+05	n/a
S96T005141	F		Silicon -ICP-Fusion	ug/g	None	None	93.60	<5.00e-02	1.38e+03	1.24e+03	1.31e+03	10.7	95.80	506.0	n/a
S96T005141	F		Samarium -ICP-Fusion	ug/g	None	None	101.4	<1.00e-01	<1.01e+03	<1.01e3	n/a	n/a	103.0	1.01e+05	n/a
S96T005141	F		Strontium -ICP-Fusion	ug/g	None	None	100.4	<1.00e-02	<1.01e+02	<1.01e2	n/a	n/a	101.0	101.0	n/a
S96T005141	F		Titanium -ICP-Fusion	ug/g	None	None	95.80	<1.00e-02	<1.01e+02	<1.01e2	n/a	n/a	96.60	101.0	n/a

=> Limit violated

=> Selected Limit

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S96T005141	F		Thallium -ICP-Fusion	ug/g	None	None	93.20	<2.00e-01	<2.02e+03	<2.03e3	n/a	n/a	96.40	2.02e+03	n/a	n/a
S96T005141	F		Uranium -ICP-Fusion	ug/g	None	None	101.0	<5.00e-01	<5.06e+03	<5.07e3	n/a	n/a	106.5	5.06e+03	n/a	n/a
S96T005141	F		Vanadium -ICP-Fusion	ug/g	None	None	100.4	<5.00e-02	<5.06e+02	<5.07e2	n/a	n/a	103.0	506.0	n/a	n/a
S96T005141	F		Zinc -ICP-Fusion	ug/g	None	None	99.80	1.60e-02	4.12e+02	436.0	424.0	5.66	102.0	101.0	n/a	n/a
S96T005141	F		Zirconium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-02	<1.01e+02	<1.01e2	n/a	n/a	102.0	101.0	n/a	n/a
S96T005141	F		Alpha of Digested Solid	uCi/g	-1.0e+00	31.60	102.2	<5.14e-04	1.32e-02	1.63e-02	1.47e-02	21.0	54.87	1.00e+03	1.47E+01	n/a
S96T005145	W		Fluoride -IC-Dionex 4000/4500	ug/g	None	None	105.8	<1.20e-02	4.48e+04	4.75e+04	4.62e+04	5.85	n/a	239.1	n/a	n/a
S96T005145	W		Chloride -IC-Dionex 4000/4500	ug/g	None	None	101.6	3.50e-02	1.08e+03	897.0	989.0	18.5	n/a	338.8	n/a	n/a
S96T005145	W		Nitrite -IC - Dionex 4000/4500	ug/g	None	None	101.1	<1.08e-01	5.45e+03	5.59e+03	5.52e+03	2.54	n/a	2.15e+03	n/a	n/a
S96T005145	W		Bromide by Ion Chromatograph	ug/g	None	None	98.64	<1.25e-01	<2.49e+03	<2.50e3	n/a	n/a	n/a	2.49e+03	n/a	n/a
S96T005145	W		Nitrate by Ion Chromatograph	ug/g	None	None	104.0	<1.39e-01	1.44e+05	1.51e+05	1.48e+05	4.75	n/a	2.77e+03	n/a	n/a
S96T005145	W		Nitrate by IC-Dionex 4000/4500	ug/g	None	None	99.82	<1.20e-01	7.99e+04	7.01e+04	7.50e+04	13.1	n/a	2.39e+03	n/a	n/a
S96T005145	W		Phosphate-IC-Dionex 4000/4500	ug/g	None	None	102.2	<1.38e-01	1.34e+05	1.53e+05	1.44e+05	13.2	n/a	2.75e+03	n/a	n/a
S96T005145	W		Sulfate by IC-Dionex 4000/4500	ug/g	None	None	104.7	<1.05e-01	<2.09e+03	<2.10e3	n/a	n/a	n/a	2.09e+03	n/a	n/a
S96T005145	W		Oxalate by IC-Dionex 4000/4500	ug/g	None	None	104.7	<1.05e-01	<2.09e+03	<2.10e3	n/a	n/a	n/a	2.09e+03	n/a	n/a

D Bottom Quarter of Segment: D Bottom Quarter of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S96T005130			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.940	n/a	n/a	n/a	n/a	5.00e-01	n/a	n/a
S96T005136			DSC Exotherm using Mettler	Joules/g	-1.0e+00	489.0	101.2	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S96T005136			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	489.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S96T005136			% Water by TGA using Mettler	%	None	None	100.2	n/a	23.81	28.44	26.12	17.7	n/a	n/a	n/a	n/a
S96T005136			TIC by Acid/Coulometry	ug/g	None	None	100.5	1.400	2.40e+02	264.0	252.0	9.52	115.0	5.000	n/a	n/a
S96T005136			TOC by Persulfate/Coulometry	ug/g	-1.0e+00	3.0e+04	91.67	5.700	1.50e+02	209.0	179.5	32.9	108.0	40.00	n/a	n/a
S96T005142	F		Silver -ICP-Fusion	ug/g	None	None	97.40	<1.00e-02	< 93.60	<9.40e1	n/a	n/a	77.00	93.60	n/a	n/a
S96T005142	F		Aluminum -ICP-Fusion	ug/g	None	None	98.00	<5.00e-02	1.15e+04	1.21e+04	1.18e+04	5.08	99.20	468.0	n/a	n/a
S96T005142	F		Arsenic -ICP-Fusion	ug/g	None	None	100.0	<1.00e-01	<9.36e+02	<9.40e2	n/a	n/a	103.0	936.0	n/a	n/a
S96T005142	F		Boron -ICP-Fusion	ug/g	None	None	100.8	<5.00e-02	<4.68e+02	<4.70e2	n/a	n/a	102.0	468.0	n/a	n/a
S96T005142	F		Barium -ICP-Fusion	ug/g	None	None	101.4	<5.00e-02	<4.68e+02	<4.70e2	n/a	n/a	99.10	468.0	n/a	n/a
S96T005142	F		Beryllium -ICP-Fusion	ug/g	None	None	102.6	<5.00e-03	< 46.80	<4.70e1	n/a	n/a	100.0	46.80	n/a	n/a
S96T005142	F		Bismuth -ICP-Fusion	ug/g	None	None	103.0	<1.00e-01	1.26e+04	1.36e+04	1.31e+04	7.63	107.0	936.0	n/a	n/a
S96T005142	F		Calcium -ICP-Fusion	ug/g	None	None	99.00	<1.00e-01	<9.36e+02	<9.40e2	n/a	n/a	99.40	936.0	n/a	n/a
S96T005142	F		Cadmium -ICP-Fusion	ug/g	None	None	98.00	<5.00e-03	< 46.80	<4.70e1	n/a	n/a	101.0	46.80	n/a	n/a
S96T005142	F		Cerium -ICP-Fusion	ug/g	None	None	99.40	<1.00e-01	<9.36e+02	<9.40e2	n/a	n/a	102.0	936.0	n/a	n/a
S96T005142	F		Cobalt -ICP-Fusion	ug/g	None	None	98.20	<2.00e-02	<1.87e+02	<1.88e2	n/a	n/a	103.0	187.0	n/a	n/a
S96T005142	F		Chromium -ICP-Fusion	ug/g	None	None	97.40	<1.00e-02	1.11e+03	1.09e+03	1.10e+03	1.82	103.0	93.60	n/a	n/a
S96T005142	F		Copper -ICP-Fusion	ug/g	None	None	102.6	<1.00e-02	< 93.60	<9.40e1	n/a	n/a	101.0	93.60	n/a	n/a
S96T005142	F		Iron -ICP-Fusion	ug/g	None	None	99.40	<5.00e-02	5.71e+03	5.61e+03	5.66e+03	1.77	91.60	468.0	n/a	n/a
S96T005142	F		Lanthanum -ICP-Fusion	ug/g	None	None	100.6	<5.00e-02	<4.68e+02	<4.70e2	n/a	n/a	101.0	468.0	n/a	n/a
S96T005142	F		Lithium -ICP-Fusion	ug/g	None	None	99.80	<1.00e-02	< 93.60	<9.40e1	n/a	n/a	87.40	93.60	n/a	n/a
S96T005142	F		Magnesium -ICP-Fusion	ug/g	None	None	97.20	<1.00e-01	<9.36e+02	<9.40e2	n/a	n/a	102.0	936.0	n/a	n/a
S96T005142	F		Manganese -ICP-Fusion	ug/g	None	None	97.40	<1.00e-02	< 93.60	95.70	n/a	n/a	102.0	93.60	n/a	n/a
S96T005142	F		Molybdenum -ICP-Fusion	ug/g	None	None	98.40	<5.00e-02	<4.68e+02	<4.70e2	n/a	n/a	101.0	468.0	n/a	n/a
S96T005142	F		Sodium -ICP-Fusion	ug/g	None	None	97.60	3.200	2.44e+05	2.33e+05	2.38e+05	4.61	40.10	936.0	n/a	n/a
S96T005142	F		Neodymium -ICP-Fusion	ug/g	None	None	104.8	<1.00e-01	<9.36e+02	<9.40e2	n/a	n/a	101.0	936.0	n/a	n/a
S96T005142	F		Nickel -ICP-Fusion	ug/g	None	None	97.00	3.74e-01	5.96e+03	5.54e+03	5.75e+03	7.30	101.0	187.0	n/a	n/a
S96T005142	F		Phosphorus -ICP-Fusion	ug/g	None	None	100.4	<2.00e-01	1.09e+04	1.16e+04	1.12e+04	6.22	105.0	1.87e+03	n/a	n/a
S96T005142	F		Lead -ICP-Fusion	ug/g	None	None	96.00	<1.00e-01	1.36e+03	1.41e+03	1.38e+03	3.61	101.0	936.0	n/a	n/a
S96T005142	F		Sulfur -ICP-Fusion	ug/g	None	None	98.20	<1.00e-01	4.99e+04	5.14e+04	5.06e+04	2.96	108.0	936.0	n/a	n/a
S96T005142	F		Antimony -ICP-Fusion	ug/g	None	None	97.00	<6.00e-02	<5.62e+02	<5.64e2	n/a	n/a	98.50	562.0	n/a	n/a

=> Limit violated
=> Selected Limit

WAF-SD-MM-DP-201, REV. 1

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S96T005142	F		Selenium -ICP-Fusion	ug/g	None	None	95.20	<1.00e-01	<9.36e+02	<9.40e2	n/a	n/a	94.50	936.0	n/a	n/a
S96T005142	F		Silicon -ICP-Fusion	ug/g	None	None	95.60	<5.00e-02	4.45e+03	3.43e+03	3.94e+03	25.9	98.10	468.0	n/a	n/a
S96T005142	F		Samarium -ICP-Fusion	ug/g	None	None	101.4	<1.00e-01	<9.36e+02	<9.40e2	n/a	n/a	102.0	936.0	n/a	n/a
S96T005142	F		Strontium -ICP-Fusion	ug/g	None	None	100.4	<1.00e-02	< 93.60	<9.40e1	n/a	n/a	101.0	93.60	n/a	n/a
S96T005142	F		Titanium -ICP-Fusion	ug/g	None	None	95.80	<1.00e-02	< 93.60	<9.40e1	n/a	n/a	97.00	93.60	n/a	n/a
S96T005142	F		Thallium -ICP-Fusion	ug/g	None	None	93.20	<2.00e-01	<1.87e+03	<1.88e3	n/a	n/a	102.0	1.87e+03	n/a	n/a
S96T005142	F		Uranium -ICP-Fusion	ug/g	None	None	101.0	<5.00e-01	<4.68e+03	<4.70e3	n/a	n/a	112.0	4.68e+03	n/a	n/a
S96T005142	F		Vanadium -ICP-Fusion	ug/g	None	None	100.4	<5.00e-02	<4.68e+02	<4.70e2	n/a	n/a	104.0	468.0	n/a	n/a
S96T005142	F		Zinc -ICP-Fusion	ug/g	None	None	99.80	1.60e-02	5.81e+02	768.0	674.5	27.7	103.0	93.60	n/a	n/a
S96T005142	F		Zirconium -ICP-Fusion	ug/g	None	None	100.2	<1.00e-02	< 93.60	<9.40e1	n/a	n/a	103.0	93.60	n/a	n/a
S96T005142	F		Alpha of Digested Solid	uCi/g	-1.0e+00	33.60	106.9	<2.89e-03	4.45e-02	4.92e-02	4.69e-02	10.0	84.68	4.00e-03	1.79E+01	n/a
S96T005146	W		Fluoride-IC-Dionex 4000/4500	ug/g	None	None	94.24	<1.20e-02	4.85e+04	5.01e+04	4.93e+04	3.25	77.80	117.8	n/a	n/a
S96T005146	W		Chloride-IC-Dionex 4000/4500	ug/g	None	None	97.09	2.60e-02	1.03e+03	1.11e+03	1.07e+03	7.48	97.09	166.8	n/a	n/a
S96T005146	W		Nitrite-IC - Dionex 4000/4500	ug/g	None	None	96.20	<1.08e-01	4.29e+03	4.42e+03	4.36e+03	2.99	94.02	1.06e+03	n/a	n/a
S96T005146	W		Bromide by Ion Chromatograph	ug/g	None	None	99.15	<1.25e-01	<1.23e+03	<1.25e3	n/a	n/a	92.19	1.23e+03	n/a	n/a
S96T005146	W		Nitrate by IC-Dionex 4000/4500	ug/g	None	None	97.64	<1.39e-01	3.40e+05	3.43e+05	3.42e+05	0.88	87.04	1.36e+03	n/a	n/a
S96T005146	W		Phosphate-IC-Dionex 4000/4500	ug/g	None	None	100.6	<1.20e-01	1.53e+04	1.63e+04	1.58e+04	6.33	100.6	1.18e+03	n/a	n/a
S96T005146	W		Sulfate by IC-Dionex 4000/4500	ug/g	None	None	100.6	<1.38e-01	2.06e+05	2.11e+05	2.08e+05	2.40	107.0	1.35e+03	n/a	n/a
S96T005146	W		Oxalate by IC-Dionex 4000/4500	ug/g	None	None	105.4	<1.05e-01	<1.03e+03	<1.05e3	n/a	n/a	104.0	1.03e+03	n/a	n/a

=> Limit violated
=> Selected Limit

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HAFC
SD-WM-DP-201, REV. 1

Table 1. Data Summary Table
B-109

CORE NUMBER: 170

SEGMENT #: 3

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	AR	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count	Err%
					Lower	Upper										
S96T005124			DSC Exotherm using Mettler	Joules/g	-1.0e+00	4.80e+00	93.15	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S96T005124			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	4.80e+00	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a	n/a
S96T005124			% Water by TGA using Mettler	%			100.8	n/a	25.76	22.68	24.22	12.7	n/a	n/a	n/a	n/a
S96T005124			TIC by Acid/Coulometry	ug/g		None	101.3	4.000	4.07e+02	378.0	392.5	7.39	n/a	5.000	n/a	n/a
S96T005124			TOC by Persulfate/Coulometry	ug/g	-1.0e+00	3.0e+04	96.00	5.300	2.53e+02	263.0	258.0	3.88	n/a	40.00	n/a	n/a
S96T005125	F		Silver -ICP-Fusion	ug/g		None	97.40	<1.00e-02	1.67e+02	<9.78e1	n/a	n/a	n/a	100.0	n/a	n/a
S96T005125	F		Aluminum -ICP-Fusion	ug/g		None	98.00	<5.00e-02	4.67e+03	7.57e+03	6.12e+03	47.4	n/a	500.0	n/a	n/a
S96T005125	F		Arsenic -ICP-Fusion	ug/g		None	100.0	<1.00e-01	<1.00e+03	<9.78e2	n/a	n/a	n/a	1.00e+03	n/a	n/a
S96T005125	F		Boron -ICP-Fusion	ug/g		None	100.8	<5.00e-02	<5.00e+02	<4.89e2	n/a	n/a	n/a	500.0	n/a	n/a
S96T005125	F		Barium -ICP-Fusion	ug/g		None	101.4	<5.00e-02	<5.00e+02	<4.89e2	n/a	n/a	n/a	500.0	n/a	n/a
S96T005125	F		Beryllium -ICP-Fusion	ug/g		None	102.6	<5.00e-03	<50.00	<4.89e1	n/a	n/a	n/a	50.00	n/a	n/a
S96T005125	F		Bismuth -ICP-Fusion	ug/g		None	103.0	<1.00e-01	6.66e+03	1.01e+04	8.38e+03	41.1	n/a	1.00e+03	n/a	n/a
S96T005125	F		Calcium -ICP-Fusion	ug/g		None	99.00	<1.00e-01	<1.00e+03	<9.78e2	n/a	n/a	n/a	1.00e+03	n/a	n/a
S96T005125	F		Cadmium -ICP-Fusion	ug/g		None	98.00	<5.00e-03	<50.00	<4.89e1	n/a	n/a	n/a	50.00	n/a	n/a
S96T005125	F		Cerium -ICP-Fusion	ug/g		None	99.40	<1.00e-01	<1.00e+03	<9.78e2	n/a	n/a	n/a	1.00e+03	n/a	n/a
S96T005125	F		Cobalt -ICP-Fusion	ug/g		None	98.20	<2.00e-02	<2.00e+02	<1.96e2	n/a	n/a	n/a	200.0	n/a	n/a
S96T005125	F		Chromium -ICP-Fusion	ug/g		None	97.40	<1.00e-02	7.50e+02	998.0	874.0	28.4	n/a	100.0	n/a	n/a
S96T005125	F		Copper -ICP-Fusion	ug/g		None	102.6	<1.00e-02	<1.00e+02	<9.78e1	n/a	n/a	n/a	100.0	n/a	n/a
S96T005125	F		Iron -ICP-Fusion	ug/g		None	99.40	<5.00e-02	3.19e+03	4.27e+03	3.73e+03	29.0	n/a	500.0	n/a	n/a
S96T005125	F		Lanthanum -ICP-Fusion	ug/g		None	100.6	<5.00e-02	<5.00e+02	<4.89e2	n/a	n/a	n/a	500.0	n/a	n/a
S96T005125	F		Lithium -ICP-Fusion	ug/g		None	99.80	<1.00e-02	<1.00e+02	<9.78e1	n/a	n/a	n/a	100.0	n/a	n/a
S96T005125	F		Magnesium -ICP-Fusion	ug/g		None	97.20	<1.00e-01	<1.00e+03	<9.78e2	n/a	n/a	n/a	1.00e+03	n/a	n/a
S96T005125	F		Manganese -ICP-Fusion	ug/g		None	97.40	<1.00e-02	<1.00e+02	<9.78e1	n/a	n/a	n/a	100.0	n/a	n/a
S96T005125	F		Molybdenum -ICP-Fusion	ug/g		None	98.40	<5.00e-02	<5.00e+02	<4.89e2	n/a	n/a	n/a	500.0	n/a	n/a
S96T005125	F		Sodium -ICP-Fusion	ug/g		None	97.60	3.200	2.63e+05	2.30e+05	2.46e+05	13.4	n/a	1.00e+03	n/a	n/a
S96T005125	F		Neodymium -ICP-Fusion	ug/g		None	104.8	<1.00e-01	<1.00e+03	<9.78e2	n/a	n/a	n/a	1.00e+03	n/a	n/a
S96T005125	F		Nickel -ICP-Fusion	ug/g		None	97.00	3.74e-01	4.42e+03	3.88e+03	4.15e+03	13.0	n/a	200.0	n/a	n/a
S96T005125	F		Phosphorus -ICP-Fusion	ug/g		None	100.4	<2.00e-01	1.50e+04	1.53e+04	1.52e+04	1.98	n/a	2.00e+03	n/a	n/a
S96T005125	F		Lead -ICP-Fusion	ug/g		None	96.00	<1.00e-01	<1.00e+03	1.16e+03	n/a	n/a	n/a	1.00e+03	n/a	n/a
S96T005125	F		Sulfur -ICP-Fusion	ug/g		None	98.20	<1.00e-01	5.80e+04	5.21e+04	5.50e+04	10.7	n/a	1.00e+03	n/a	n/a
S96T005125	F		Antimony -ICP-Fusion	ug/g		None	97.00	<6.00e-02	<6.00e+02	<5.87e2	n/a	n/a	n/a	600.0	n/a	n/a
S96T005125	F		Selenium -ICP-Fusion	ug/g		None	95.20	<1.00e-01	<1.00e+03	<9.78e2	n/a	n/a	n/a	1.00e+03	n/a	n/a
S96T005125	F		Silicon -ICP-Fusion	ug/g		None	93.60	<5.00e-02	1.19e+03	1.31e+03	1.25e+03	9.60	n/a	500.0	n/a	n/a
S96T005125	F		Samarium -ICP-Fusion	ug/g		None	101.4	<1.00e-01	<1.00e+03	<9.78e2	n/a	n/a	n/a	1.00e+03	n/a	n/a
S96T005125	F		Strontium -ICP-Fusion	ug/g		None	100.4	<1.00e-02	<1.00e+02	<9.78e1	n/a	n/a	n/a	100.0	n/a	n/a
S96T005125	F		Titanium -ICP-Fusion	ug/g		None	95.80	<1.00e-02	<1.00e+02	<9.78e1	n/a	n/a	n/a	100.0	n/a	n/a
S96T005125	F		Thallium -ICP-Fusion	ug/g		None	93.20	<2.00e-01	<2.00e+03	<1.96e3	n/a	n/a	n/a	2.00e+03	n/a	n/a
S96T005125	F		Uranium -ICP-Fusion	ug/g		None	101.0	<5.00e-01	<5.00e+03	<4.89e3	n/a	n/a	n/a	5.00e+03	n/a	n/a
S96T005125	F		Vanadium -ICP-Fusion	ug/g		None	100.4	<5.00e-02	<5.00e+02	<4.89e2	n/a	n/a	n/a	500.0	n/a	n/a
S96T005125	F		Zinc -ICP-Fusion	ug/g		None	99.80	1.60e-02	3.60e+02	638.0	499.0	55.7	n/a	100.0	n/a	n/a
S96T005125	F		Zirconium -ICP-Fusion	ug/g		None	100.2	<1.00e-02	<1.00e+02	<9.78e1	n/a	n/a	n/a	100.0	n/a	n/a
S96T005126	W		Fluoride-IC-Dionex 4000/4500	ug/g		None	105.8	<1.20e-02	4.70e+04	4.72e+04	4.71e+04	0.42	101.2	234.9	n/a	n/a
S96T005126	W		Chloride-IC-Dionex 4000/4500	ug/g		None	101.6	3.50e-02	1.14e+03	1.15e+03	1.15e+03	0.87	98.23	332.9	n/a	n/a

=> Limit violated

=> Selected Limit

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005126	W		Nitrite-IC - Dionex 4000/4500	ug/g	None	None	101.1	<1.08e-01	5.48e+03	5.84e+03	5.66e+03	6.36	94.81	2.12e+03	n/a
S96T005126	W		Bromide by Ion Chromatograph	ug/g	None	None	98.64	<1.25e-01	<2.45e+03	<2.49e3	n/a	n/a	96.10	2.45e+03	n/a
S96T005126	W		Nitrate by IC-Dionex 4000/4500	ug/g	None	None	104.0	<1.39e-01	2.54e+05	2.59e+05	2.56e+05	1.95	111.6	2.72e+03	n/a
S96T005126	W		Phosphate-IC-Dionex 4000/4500	ug/g	None	None	99.82	<1.20e-01	2.54e+04	2.44e+04	2.49e+04	4.02	98.35	2.35e+03	n/a
S96T005126	W		Sulfate by IC-Dionex 4000/4500	ug/g	None	None	102.2	<1.38e-01	1.90e+05	1.89e+05	1.90e+05	0.53	103.3	2.70e+03	n/a
S96T005126	W		Oxalate by IC-Dionex 4000/4500	ug/g	None	None	104.7	<1.05e-01	<2.06e+03	<2.09e3	n/a	n/a	104.5	2.06e+03	n/a

=> Limit violated

=> Selected Limit

38

HNF
WH6-SD-WM-DP-201, REV. 1

~~WMC~~^{HNF}-SD-WM-DP-201, REV. 1

PHOTOGRAPHS

~~HNF~~
~~WMC~~ SD-WM-DP-201, REV. 1

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B-109 Core 169 Seg #1 9-16-96

B-109

Core 169

Seg # 2

9-16-96

B-109 Core 169 Seg # 2A 9-17-96

B-109 Core 170 Segment #1 9-16-96

B-109

Cole 170

Seg #2

9-16-96

B-109 Core 170 Seg # 3 9-17-96

~~HNF~~
~~WMC~~-SD-WM-DP-201, REV. 1

SAMPLE HANDLING

~~HNF~~
~~WMC-SD-WM-DP-201, REV. 1~~

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LABCORE Data Entry Template for Worklist# 12834

Analyst: CC Instrument: BA000 Book # NA

Method: LO-160-103 Rev/Mod

B0

Worklist Comment: B-109 C169 SEG # 1 RISER 7 EXTRUSION

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>20.00</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>500.07</u>	<u>N/A</u>	
96001237	B-109	3 SAMPLE	S96T004927	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		mL
96001237	B-109	4 SAMPLE	S96T004927	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
96001237	B-109	5 SAMPLE	S96T004927	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/mL
96001237	B-109	6 SAMPLE	S96T004927	0	EXTRUD01	SOLID	<u>N/A</u>	<u>complete</u>		
96001237	B-109	7 SAMPLE	S96T004927	0	LLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
96001237	B-109	8 SAMPLE	S96T004927	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1184</u>		
96001237	B-109	9 SAMPLE	S96T004927	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		mL
96001237	B-109	10 SAMPLE	S96T004927	0	SLDWT-01	SOLID	<u>N/A</u>	<u>16.0</u>		g
96001237	B-109	11 SAMPLE	S96T004927	0	APPEAR01	SOLID	<u>N/A</u>	<u>complete</u>		
96001237	B-109	12 SAMPLE	S96T004927	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		mL

Final page for worklist # 12834

CC

Analyst Signature

Date

9-16-96

CC

Analyst Signature

Date

9-16-96

Reviewed by John B. Remy 9-18-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 12835

Analyst: EC Instrument: BA000 Book # NA

Method: LO-160-103 Rev/Mod 00

Worklist Comment: B-109 C169 SEG # 2A RISER 7 EXTRUSION

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>20.00</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>500.07</u>	<u>N/A</u>	
96001237	B-109	3 SAMPLE	S96T004928	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		ml
96001237	B-109	4 SAMPLE	S96T004928	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
96001237	B-109	5 SAMPLE	S96T004928	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/ml
96001237	B-109	6 SAMPLE	S96T004928	0	EXTRUD01	SOLID	<u>N/A</u>	<u>complete</u>		
96001237	B-109	7 SAMPLE	S96T004928	0	LLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
96001237	B-109	8 SAMPLE	S96T004928	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1184</u>		
96001237	B-109	9 SAMPLE	S96T004928	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		ml
96001237	B-109	10 SAMPLE	S96T004928	0	SLDWT-01	SOLID	<u>N/A</u>	<u>7.1</u>		g
96001237	B-109	11 SAMPLE	S96T004928	0	APPEAR01	SOLID	<u>N/A</u>	<u>complete</u>		
96001237	B-109	12 SAMPLE	S96T004928	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		ml

Final page for worklist # 12835

CSL 9-17-96
Analyst Signature Date

CSL 9-17-96
Analyst Signature Date

Reviewed by Arthur B. Beatty 9-18-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 12836

Analyst: EL Instrument: BA000 Book # NA

Method: LO-160-103 Rev/Mod D0

Worklist Comment: B-109 C170 FIELD BLANK RISER 4 EXTRUSION

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	INSTCHK01				EXTRUD01	SOLID	<u>20</u>	<u>20.00</u>	<u>N/A</u>	
		2	INSTCHK02				EXTRUD01	SOLID	<u>500</u>	<u>500.07</u>	<u>N/A</u>	
96001238	B-109	3	SAMPLE	S96T004929	0		DLIQVOL1	SOLID	<u>N/A</u>	<u>250</u>		ml
96001238	B-109	4	SAMPLE	S96T004929	0		DLIQWT01	SOLID	<u>N/A</u>	<u>251.8</u>		g
96001238	B-109	5	SAMPLE	S96T004929	0		EST.G/ML	SOLID	<u>N/A</u>	<u>1.0</u>		g/ml
96001238	B-109	6	SAMPLE	S96T004929	0		EXTRUD01	SOLID	<u>N/A</u>	<u>Complete</u>		
96001238	B-109	7	SAMPLE	S96T004929	0		LLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
96001238	B-109	8	SAMPLE	S96T004929	0		NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1184</u>		
96001238	B-109	9	SAMPLE	S96T004929	0		SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		ml
96001238	B-109	10	SAMPLE	S96T004929	0		SLDWT-01	SOLID	<u>N/A</u>	<u>0</u>		g
96001238	B-109	11	SAMPLE	S96T004929	0		APPEAR01	SOLID	<u>N/A</u>	<u>Complete</u>		
96001238	B-109	12	SAMPLE	S96T004929	0		ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		ml

Final page for worklist # 12836

EL 9-16-96
Analyst Signature Date

EL 9-16-96
Analyst Signature Date

Reviewed by John B. Reedy 9-18-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 12837

Analyst: CC Instrument: BA000 Book # NA

Method: LO-160-103 Rev/Mod B0

Worklist Comment: B-109 C170 SEG # 1 RISER 4 EXTRUSION

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>20.00</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>500.07</u>	<u>N/A</u>	
96001238	B-109	3 SAMPLE	S96T004930	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		mL
96001238	B-109	4 SAMPLE	S96T004930	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
96001238	B-109	5 SAMPLE	S96T004930	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/mL
96001238	B-109	6 SAMPLE	S96T004930	0	EXTRUD01	SOLID	<u>N/A</u>	<u>complete</u>		
96001238	B-109	7 SAMPLE	S96T004930	0	LLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
96001238	B-109	8 SAMPLE	S96T004930	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1184</u>		
96001238	B-109	9 SAMPLE	S96T004930	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		mL
96001238	B-109	10 SAMPLE	S96T004930	0	SLDWT-01	SOLID	<u>N/A</u>	<u>72.2</u>		g
96001238	B-109	11 SAMPLE	S96T004930	0	APPEAR01	SOLID	<u>N/A</u>	<u>complete</u>		
96001238	B-109	12 SAMPLE	S96T004930	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		mL

Final page for worklist # 12837

Analyst Signature CC Date 9-16-96

Analyst Signature CC Date 9-16-96

Reviewed by Stacy B. Benoit 9-18-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 12838

Analyst: EL Instrument: BA000 Book # NA

Method: LO-160-103 Rev/Mod B0

Worklist Comment: B-109 C170 SEG # 2 RISER 4 EXTRUSION

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>20.00</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>500.07</u>	<u>N/A</u>	
96001238	B-109	3 SAMPLE	S96T004931	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		ml
96001238	B-109	4 SAMPLE	S96T004931	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
96001238	B-109	5 SAMPLE	S96T004931	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/ml
96001238	B-109	6 SAMPLE	S96T004931	0	EXTRUD01	SOLID	<u>N/A</u>	<u>complete</u>		
96001238	B-109	7 SAMPLE	S96T004931	0	LLIQWT01	SOLID	<u>N/A</u>	<u><5</u>		g
96001238	B-109	8 SAMPLE	S96T004931	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1184</u>		
96001238	B-109	9 SAMPLE	S96T004931	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		ml
96001238	B-109	10 SAMPLE	S96T004931	0	SLDWT-01	SOLID	<u>N/A</u>	<u>424.9</u>		g
96001238	B-109	11 SAMPLE	S96T004931	0	APPEAR01	SOLID	<u>N/A</u>	<u>complete</u>		
96001238	B-109	12 SAMPLE	S96T004931	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		ml

Final page for worklist # 12838

Analyst Signature CSE Date 9-17-96

Analyst Signature CSE Date 9-17-96

Reviewed by John B. Bency 9-18-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 12908

Analyst: CE Instrument: BA000 Book # NA

Method: LO-160-103 Rev/Mod B0

Worklist Comment: B-109 C169 SEG # 2 RISER 7 EXTRUSION

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 INSTCHK01			EXTRUD01	SOLID	<u>20</u>	<u>20.00</u>	<u>N/A</u>	
		2 INSTCHK02			EXTRUD01	SOLID	<u>500</u>	<u>500.07</u>	<u>N/A</u>	
96001237	B-109	3 SAMPLE	S96T004934	0	DLIQVOL1	SOLID	<u>N/A</u>	<u>0</u>		mL
96001237	B-109	4 SAMPLE	S96T004934	0	DLIQWT01	SOLID	<u>N/A</u>	<u>0</u>		g
96001237	B-109	5 SAMPLE	S96T004934	0	EST.G/ML	SOLID	<u>N/A</u>	<u>0</u>		g/mL
96001237	B-109	6 SAMPLE	S96T004934	0	EXTRUD01	SOLID	<u>N/A</u>	<u>complete</u>		
96001237	B-109	7 SAMPLE	S96T004934	0	LLIQWT01	SOLID	<u>N/A</u>	<u><5</u>		g
96001237	B-109	8 SAMPLE	S96T004934	0	NOTEBOOK	SOLID	<u>N/A</u>	<u>N-1184</u>		
96001237	B-109	9 SAMPLE	S96T004934	0	SLDVOL01	SOLID	<u>N/A</u>	<u>NA</u>		mL
96001237	B-109	10 SAMPLE	S96T004934	0	SLDWT-01	SOLID	<u>N/A</u>	<u>142.5</u>		g
96001237	B-109	11 SAMPLE	S96T004934	0	APPEAR01	SOLID	<u>N/A</u>	<u>complete</u>		
96001237	B-109	12 SAMPLE	S96T004934	0	ORGVOL01	SOLID	<u>N/A</u>	<u>0</u>		mL

Final page for worklist # 12908

CSL 9-16-96
Analyst Signature Date

CSL 9-16-96
Analyst Signature Date

Reviewed by Arthur B. Benf 9-18-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

~~WMC~~^{HNF} SD-WM-DP-201, REV. 1

SAMPLE PREPARATIONS

~~HNE~~
~~WIC~~ SD-WM-DP-201, REV. 1

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LABCORE Data Entry Template for Worklist# 13355

Analyst: KNT Instrument: FUS01 Book # _____

Method: LA-549-141 Rev/Mod _____

Worklist Comment: B-109 FUSION DIGEST C169S1, S2 S2A LH, UH lad

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP		FUSION01	SOLID	<u>1</u>	<u>.250</u>	<u>N/A</u>	g/L
96001237	B-109	2	SAMPLE S96T005103 O F .5308 → .250L		FUSION01	SOLID	<u>N/A</u>	<u>2.1232</u>		g/L
96001237	B-109	3	SAMPLE S96T005103 O F		DOSE-02	SOLID	<u>N/A</u>	<u>15</u>		mrad/hour
96001237	B-109	4	DUP S96T005103 O F .5442 → .250L		FUSION01	SOLID	<u>2.1232</u>	<u>2.1768</u>	<u>N/A</u>	g/L
96001237	B-109	5	DUP S96T005103 O F		DOSE-02	SOLID	<u>15</u>	<u>25</u>	<u>N/A</u>	mrad/hour
96001237	B-109	6	SAMPLE S96T005109 O F .4801 → .250L		FUSION01	SOLID	<u>N/A</u>	<u>1.9204</u>		g/L
96001237	B-109	7	SAMPLE S96T005109 O F		DOSE-02	SOLID	<u>N/A</u>	<u>40</u>		mrad/hour
96001237	B-109	8	DUP S96T005109 O F .5080 → .250L		FUSION01	SOLID	<u>1.9204</u>	<u>2.032</u>	<u>N/A</u>	g/L
96001237	B-109	9	DUP S96T005109 O F		DOSE-02	SOLID	<u>40</u>	<u>50</u>	<u>N/A</u>	mrad/hour
96001237	B-109	10	SAMPLE S96T005113 O F .4651 → .250L		FUSION01	SOLID	<u>N/A</u>	<u>1.8604</u>		g/L
96001237	B-109	11	SAMPLE S96T005113 O F		DOSE-02	SOLID	<u>N/A</u>	<u>40</u>		mrad/hour
96001237	B-109	12	DUP S96T005113 O F .4550 → .250L		FUSION01	SOLID	<u>1.8604</u>	<u>1.8200</u>	<u>N/A</u>	g/L
96001237	B-109	13	DUP S96T005113 O F		DOSE-02	SOLID	<u>40</u>	<u>40</u>	<u>N/A</u>	mrad/hour

Final page for worklist # 13355

Analyst Signature: Kim Thomas Date: 10-12-96

Analyst Signature: Susan Bee Date: 10/14/96

Analyst Signature: Susan M. Jickson Date: 10-13-96

S96T005102 → S96T005103
S96T005108 → S96T005109
S96T005112 → S96T005113

Jan. Jickson
S. Jickson 10/14/96

Data Entry Comments:

submitted by Bob King

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

worklistprt Version 2.1 05/15/95
10/11/96 22:08

Page: 1

LABCORE Data Entry Template for Worklist# 13357

Analyst: KRM Instrument: FUS01 Book # _____

Method: LA-549-141 Rev/Mod _____

Worklist Comment: B-109 FUSION DIGEST C170S1, QTR A, QTR B LH lad

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP		FUSION01	SOLID	<u>1</u>	<u>2.50</u>	N/A	g/L
96001238	B-109	2	SAMPLE S96T005121 0 F .5017g → .25 L		FUSION01	SOLID	N/A	<u>2.0068</u>		g/L
96001238	B-109	3	SAMPLE S96T005121 0 F		DOSE-02	SOLID	N/A	<u>3</u>		mrad/hour
96001238	B-109	4	DUP S96T005121 0 F .5087g → .25 L		FUSION01	SOLID	<u>2.0068</u>	<u>2.0348</u>	N/A	g/L
96001238	B-109	5	DUP S96T005121 0 F		DOSE-02	SOLID	<u>3</u>	<u>5</u>	N/A	mrad/hour
96001238	B-109	6	SAMPLE S96T005139 0 F .5074g → .25 L		FUSION01	SOLID	N/A	<u>2030</u>		g/L
96001238	B-109	7	SAMPLE S96T005139 0 F		DOSE-02	SOLID	N/A	<u>2</u>		mrad/hour
96001238	B-109	8	DUP S96T005139 0 F .5122g → .25 L		FUSION01	SOLID	<u>2030</u>	<u>2.0488</u>	N/A	g/L
96001238	B-109	9	DUP S96T005139 0 F		DOSE-02	SOLID	<u>2</u>	<u>2.5</u>		mrad/hour
96001238	B-109	10	SAMPLE S96T005140 0 F .5069g → .25 L		FUSION01	SOLID	N/A	<u>2.0276</u> <u>2.0067</u>	N/A	g/L
96001238	B-109	11	SAMPLE S96T005140 0 F		DOSE-02	SOLID	N/A	<u>2.5</u>		mrad/hour
96001238	B-109	12	DUP S96T005140 0 F .4995g → .25 L		FUSION01	SOLID	<u>2.0067</u>	<u>1.998</u>	N/A	g/L
9 001238	B-109	13	DUP S96T005140 0 F		DOSE-02	SOLID	<u>2.5</u>	<u>2.5</u>	N/A	mrad/hour

Final page for worklist # 13357

Analyst Signature _____ Date 10-12-96

Analyst Signature _____ Date 10/13/96

Validated
B. Shelby 10/14/96

Data Entry Comments: ALL SAMPLES CLEAR, COLORLESS 20ml CON HNO₃
No SOLIDS HPT C. Cooper

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

worklistrpt Version 2.1 05/15/95
10/11/96 22:11

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LABCORE Data Entry Template for Worklist# 13358

Analyst: KRM Instrument: FUS01 Book # _____

Method: LA-549-141 Rev/Mod _____

Worklist Comment: B-109 FUSION DIGEST C170S2,3 QTR C, QTR D, LH lad

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			FUSION01	SOLID	1	1.250	N/A	g/L
96001238	B-109	2 SAMPLE	S96T005125 0 F		FUSION01	SOLID	N/A	1.9996		g/L
96001238	B-109	3 SAMPLE	S96T005125 0 F		DOSE-02	SOLID	N/A	2.5		mrad/hour
96001238	B-109	4 DUP	S96T005125 0 F		FUSION01	SOLID	1.9996	2.0448	N/A	g/L
96001238	B-109	5 DUP	S96T005125 0 F		DOSE-02	SOLID	2.5	2.5	N/A	mrad/hour
96001238	B-109	6 SAMPLE	S96T005141 0 F		FUSION01	SOLID	N/A	1.9756		g/L
96001238	B-109	7 SAMPLE	S96T005141 0 F		DOSE-02	SOLID	N/A	2.5		mrad/hour
96001238	B-109	8 DUP	S96T005141 0 F		FUSION01	SOLID	1.9756	1.9728	N/A	g/L
96001238	B-109	9 DUP	S96T005141 0 F		DOSE-02	SOLID	2.5	2.5	N/A	mrad/hour
96001238	B-109	10 SAMPLE	S96T005142 0 F		FUSION01	SOLID	N/A	2.1360		g/L
96001238	B-109	11 SAMPLE	S96T005142 0 F		DOSE-02	SOLID	N/A	2.5		mrad/hour
96001238	B-109	12 DUP	S96T005142 0 F		FUSION01	SOLID	2.1360	2.1284	N/A	g/L
96001238	B-109	13 DUP	S96T005142 0 F		DOSE-02	SOLID	2.5	2.5	N/A	mrad/hour

Final page for worklist # 13358

Analyst Signature [Signature] Date 10-12-96

Analyst Signature [Signature] Date 10/13/96

Val: dated
S. Volley 10/14/96

Data Entry Comments: S96T 5125 CLEAR COLORLESS NO SOLIDS 20ml CON HNO₃
S96T 5142 CLEAR LIGHT YELLOW NO SOLIDS 20ml CON HNO₃; S96T 5141 CLEAR,
YELLOW, NO SOLIDS 20ml CON HNO₃ HPT C. COOPER

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

worklistrpt Version 2.1 05/15/95
10/11/96 22:08

Page: 1

LABCORE Data Entry Template for Worklist# 13356

Analyst: KNT Instrument: H2O01 Book # _____

Method: LA-504-101 Rev/Mod _____

Worklist Comment: B-109 H2O DIGEST C169S1,2,2A UH LH lad

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			H2ODIG01	SOLID	<u>1</u>	<u>.100</u>	<u>N/A</u>	g/L
96001237	B-109	2 SAMPLE	S96T005104	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>4.650</u>		g/L
		<u>.4650</u> → <u>.100L</u>								
96001237	B-109	3 SAMPLE	S96T005104	0 W	DOSE-02	SOLID	<u>N/A</u>	<u>5</u>		mrad/hour
96001237	B-109	4 DUP	S96T005104	0 W	H2ODIG01	SOLID	<u>.4650</u>	<u>4.707</u>	<u>N/A</u>	g/L
		<u>.4707</u> → <u>.100L</u>								
96001237	B-109	5 DUP	S96T005104	0 W	DOSE-02	SOLID	<u>5</u>	<u>5</u>	<u>N/A</u>	mrad/hour
96001237	B-109	6 SAMPLE	S96T005110	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>5.042</u>		g/L
		<u>.5042</u> → <u>.100L</u>								
96001237	B-109	7 SAMPLE	S96T005110	0 W	DOSE-02	SOLID	<u>N/A</u>	<u>8</u>		mrad/hour
96001237	B-109	8 DUP	S96T005110	0 W	H2ODIG01	SOLID	<u>5.042</u>	<u>4.982</u>	<u>N/A</u>	g/L
		<u>.4482</u> → <u>.100L</u>								
96001237	B-109	9 DUP	S96T005110	0 W	DOSE-02	SOLID	<u>8</u>	<u>8</u>	<u>N/A</u>	mrad/hour
96001237	B-109	10 SAMPLE	S96T005114	0 W	H2ODIG01	SOLID	<u>N/A</u>	<u>4.580</u>		g/L
		<u>.4580</u> → <u>.100L</u>								
96001237	B-109	11 SAMPLE	S96T005114	0 W	DOSE-02	SOLID	<u>N/A</u>	<u>3</u>		mrad/hour
96001237	B-109	12 DUP	S96T005114	0 W	H2ODIG01	SOLID	<u>4.580</u>	<u>4.677</u>	<u>N/A</u>	g/L
		<u>.4677</u> → <u>.100L</u>								
96001237	B-109	13 DUP	S96T005114	0 W	DOSE-02	SOLID	<u>3</u>	<u>3</u>	<u>N/A</u>	mrad/hour

Final page for worklist # 13356

Analyst Signature Kim Thomas Date 10-12-96

David Suh 10-13-96
S96T005102 → S96T005104
S96T005108 → S96T005110
S96T005112 → S96T005114

Analyst Signature Susan Rue Date 10/14/96

1st: David
1st: 10/14/96

Data En. : Comments:

Submitted by Mark King

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 13359

Analyst: krq Instrument: H2001 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: B-109 H2O DIGEST C170S1, 2 LH QTR A, QTR B lad

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK-PREP		0	H2ODIG01	SOLID	1	1.00	0.100	g/L
2 SAMPLE	S96T005122	0 W	H2ODIG01	SOLID	N/A	5.1150	1.00e-004	g/L
3 SAMPLE	S96T005122	0 W	DOSE-02	SOLID	N/A	<0.5	9.99e-002	mrad/hour
4 DUP	S96T005122	0 W	H2ODIG01	SOLID	5.1150	5.0940	0.411	RPD
5 DUP	S96T005122	0 W	DOSE-02	SOLID	<0.5	<0.5		mrad/hr
6 SAMPLE	S96T005143	0 W	H2ODIG01	SOLID	N/A	5.0950	1.00e-004	g/L
7 SAMPLE	S96T005143	0 W	DOSE-02	SOLID	N/A	<0.5	9.99e-002	mrad/hour
8 DUP	S96T005143	0 W	H2ODIG01	SOLID	5.0950	5.0030	1.822	RPD
9 DUP	S96T005143	0 W	DOSE-02	SOLID	<0.5	<0.5		mrad/hr
10 SAMPLE	S96T005144	0 W	H2ODIG01	SOLID	N/A	5.0440	1.00e-004	g/L
11 SAMPLE	S96T005144	0 W	DOSE-02	SOLID	N/A	2.5	9.99e-002	mrad/hour
12 DUP	S96T005144	0 W	H2ODIG01	SOLID	5.0440	4.9950	0.976	RPD
13 DUP	S96T005144	0 W	DOSE-02	SOLID	2.5	2.5	1.000	mrad/hr

Final page for worklist# 13359

Analyst Signature _____ Date _____

FR Olson 10-14-96
Analyst Signature Date

G Mally 10/14/96
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 13359

Analyst: SRD Instrument: H2O01 Book # _____

Method: LA-504-101 Rev/Mod _____

Worklist Comment: B-109 H2O DIGEST C170S1, 2 LH QTR A, QTR B lad

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			H2O01G01	SOLID	<u>1</u>	<u>.100</u>	N/A	g/L
96001238	B-109	2 SAMPLE	S96T005122	0 W	H2O01G01	SOLID	N/A	<u>5.1150</u>		g/L
		<u>.5115</u> → <u>.100</u>								
96001238	B-109	3 SAMPLE	S96T005122	0 W	DOSE-02	SOLID	N/A	<u>20.5</u>		mrad/hour
96001238	B-109	4 DUP	S96T005122	0 W	H2O01G01	SOLID	<u>5.1150</u>	<u>5.0940</u>	N/A	g/L
		<u>.5094</u> → <u>.100</u>								
96001238	B-109	5 DUP	S96T005122	0 W	DOSE-02	SOLID	<u>20.5</u>	<u>20.5</u>	N/A	mrad/hour
96001238	B-109	6 SAMPLE	S96T005143	0 W	H2O01G01	SOLID	N/A	<u>5.0950</u>		g/L
		<u>.5095</u> → <u>.100</u>								
96001238	B-109	7 SAMPLE	S96T005143	0 W	DOSE-02	SOLID	N/A	<u>20.5</u>		mrad/hour
96001238	B-109	8 DUP	S96T005143	0 W	H2O01G01	SOLID	<u>5.0950</u>	<u>5.0030</u>	N/A	g/L
		<u>.5003</u> → <u>.100</u>								
96001238	B-109	9 DUP	S96T005143	0 W	DOSE-02	SOLID	<u>20.5</u>	<u>20.5</u>	N/A	mrad/hour
96001238	B-109	10 SAMPLE	S96T005144	0 W	H2O01G01	SOLID	N/A	<u>5.0440</u>		g/L
		<u>.5044</u> → <u>.100</u>								
96001238	B-109	11 SAMPLE	S96T005144	0 W	DOSE-02	SOLID	N/A	<u>2.5</u>		mrad/hour
96001238	B-109	12 DUP	S96T005144	0 W	H2O01G01	SOLID	<u>5.0440</u>	<u>4.9950</u>	N/A	g/L
		<u>.4995</u> → <u>.100</u>								
96001238	B-109	13 DUP	S96T005144	0 W	DOSE-02	SOLID	<u>2.5</u>	<u>2.5</u>	N/A	mrad/hour

Final page for worklist # 13359

Analyst Signature: [Signature] Date: 10/13/96

Analyst Signature: [Signature] Date: 10-14-96

Data Entry Comments:

S96T005119 — S96T005122
S96T005131 — S96T005143
S96T005132 — S96T005144

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 13360

Analyst: krq

Instrument: H2001

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: B-109 H2O DIGEST C170S2,3 UH, QTR C, QTR D lad

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK-PREP		0	H2ODIG01	SOLID	1	.100	0.100	g/L
2 SAMPLE	S96T005126	0 W	H2ODIG01	SOLID	N/A	5.1580	1.00e-004	g/L
3 SAMPLE	S96T005126	0 W	DOSE-02	SOLID	N/A	2.5	9.99e-002	mrad/hour
4 DUP	S96T005126	0 W	H2ODIG01	SOLID	5.1580	5.0790	1.543	RPD
5 DUP	S96T005126	0 W	DOSE-02	SOLID	2.5	2.5	1.000	mrad/hr
6 SAMPLE	S96T005145	0 W	H2ODIG01	SOLID	N/A	5.0690	1.00e-004	g/L
7 SAMPLE	S96T005145	0 W	DOSE-02	SOLID	N/A	2.5	9.99e-002	mrad/hour
8 DUP	S96T005145	0 W	H2ODIG01	SOLID	5.0690	5.0590	0.197	RPD
9 DUP	S96T005145	0 W	DOSE-02	SOLID	2.5	2.5	1.000	mrad/hr
10 SAMPLE	S96T005146	0 W	H2ODIG01	SOLID	N/A	5.1970	1.00e-004	g/L
11 SAMPLE	S96T005146	0 W	DOSE-02	SOLID	N/A	<0.5	9.99e-002	mrad/hour
12 DUP	S96T005146	0 W	H2ODIG01	SOLID	5.1970	5.1050	1.786	RPD
13 DUP	S96T005146	0 W	DOSE-02	SOLID	<0.5	<0.5		mrad/hr

Final page for worklist# 13360

Analyst Signature _____ Date _____

TR Olson 10-14-96
Analyst Signature _____ Date _____

G Mollay 10/14/96
Reviewer Signature _____ Date _____

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 13360

Analyst: KBC Instrument: H2O01 Book # _____

Method: LA-504-101 Rev/Mod _____

Worklist Comment: B-109 H2O DIGEST C170S2,3 UH, QTR C, QTR D lad

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK-PREP			H2O01G01	SOLID	<u>1</u>	<u>100</u>	N/A	g/L
95001238	B-109	2 SAMPLE	S96T005126	0 W	H2O01G01	SOLID	N/A	<u>5.1580</u>		g/L
96001238	B-109	3 SAMPLE	S96T005126	0 W	DOSE-02	SOLID	N/A	<u>2.5</u>		mrad/hour
96001238	B-109	4 DUP	S96T005126	0 W	H2O01G01	SOLID	<u>5.1580</u>	<u>5.0290</u>	N/A	g/L
96001238	B-109	5 DUP	S96T005126	0 W	DOSE-02	SOLID	<u>2.5</u>	<u>2.5</u>	N/A	mrad/hour
96001238	B-109	6 SAMPLE	S96T005145	0 W	H2O01G01	SOLID	N/A	<u>5.0690</u>		g/L
96001238	B-109	7 SAMPLE	S96T005145	0 W	DOSE-02	SOLID	N/A	<u>2.5</u>		mrad/hour
96001238	B-109	8 DUP	S96T005145	0 W	H2O01G01	SOLID	<u>5.0690</u>	<u>5.0590</u>	N/A	g/L
96001238	B-109	9 DUP	S96T005145	0 W	DOSE-02	SOLID	<u>2.5</u>	<u>2.5</u>	N/A	mrad/hour
96001238	B-109	10 SAMPLE	S96T005146	0 W	H2O01G01	SOLID	N/A	<u>5.1970</u>		g/L
96001238	B-109	11 SAMPLE	S96T005146	0 W	DOSE-02	SOLID	N/A	<u>20.5</u>		mrad/hour
96001238	B-109	12 DUP	S96T005146	0 W	H2O01G01	SOLID	<u>5.1970</u>	<u>5.1030</u>	N/A	g/L
96001238	B-109	13 DUP	S96T005146	0 W	DOSE-02	SOLID	<u>20.5</u>	<u>20.5</u>	N/A	mrad/hour

Final page for worklist # 13360

Analyst Signature _____ Date 10/13/96

Analyst Signature TR. Olson Date 10-14-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

S96T005124 — S96T005126
S96T005135 — S96T005145
S96T005136 — S96T005146

HNF
~~WHC~~-SD-WM-DP-201, REV. 1

BULK DENSITY WORKSHEET

~~WMC~~^{HNF} SD-WM-DP-201, REV. 1

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Requestor: NUZUM

Bulk Density Worksheet

Date: 10/7/96Tank: B-109Core: 169Seg: 24HAuger: —Sample ID: 59101005107
 Start Time: _____
 End Time: _____
 Homogenization
 Time (Min.): _____
Jar#: 10985Jar/Vial Size: 125 mLInitial Weight: 262.2 g

Final Weight: _____ g

Net Weight: _____ g

Cone#: 85

Final Vol: _____ mL

Initial Weight: 7.46 gFinal Weight: 25.05 gNet Weight: 17.59 g

Sample ID: _____

Appearance/Narrative:

$$\frac{17.59}{9.5} = 1.85 \text{ g/mL}$$

Tank: _____

Core: _____

Seg: _____

Auger: _____

Sample ID: _____

 Start Time: _____
 End Time: _____
 Homogenization
 Time (Min.): _____

Jar#: _____

Jar/Vial Size: _____ mL

Initial Weight: _____ g

Final Weight: _____ g

Net Weight: _____ g

Cone#: _____

Final Vol: _____ mL

Initial Weight: _____ g

Final Weight: _____ g

Net Weight: _____ g

Sample ID: _____

Appearance/Narrative:

 11/16/96
 WGC-SD-MM-DP-201, REV. 1

Requestor: NUZUM

Bulk Density Worksheet

Date: 10/8/96

Tank: B-109
Core: 170
Seg: 2QS.C
Auger: _____
Sample ID: 596T005129

Start Time: _____
End Time: _____
Homogenization
Time (Min.): _____

Jar#: 11363
Jar/Vial Size: 60 mL
Initial Weight: 161.0 g
Final Weight: _____ g
Net Weight: _____ g

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Cone#: 63
Final Vol: 9.0 mL
Initial Weight: 7.48 g
Final Weight: 23.95 g
Net Weight: 16.47 g
Sample ID: _____

Appearance/Narrative:

$$16.47 / 9.0 = 1.83 \text{ g/mL}$$

Tank: B-109
Core: 170
Seg: 2QS.D
Auger: _____
Sample ID: 596T005130

Start Time: _____
End Time: _____
Homogenization
Time (Min.): _____

Jar#: 11360
Jar/Vial Size: 60 mL
Initial Weight: 140.3 g
Final Weight: _____ g
Net Weight: _____ g

Cone#: 60
Final Vol: 10.0 mL
Initial Weight: 7.45 g
Final Weight: 26.89 g
Net Weight: 19.44 g
Sample ID: _____

Appearance/Narrative:

$$19.44 / 10.0 = 1.94 \text{ g/mL}$$

Requestor: NUZUM

Bulk Density Worksheet

Date: 10/7/96

Tank: B-109
Core: 170
Seg: 12H
Auger: —
Sample ID: 5961005118

Start Time: _____
End Time: _____
Homogenization
Time (Min.): _____

Jar#: 10975
Jar/Vial Size: 125 mL
Initial Weight: _____ g
Final Weight: _____ g
Net Weight: _____ g

Cone#: 75
Final Vol: _____ mL
Initial Weight: 7.51 g
Final Weight: 18.13 g
Net Weight: _____ g
Sample ID: _____

Appearance/Narrative:

TOO DRY, WOULD
NOT PACK DOWN?

Tank: _____
Core: _____
Seg: _____
Auger: _____
Sample ID: _____

Start Time: _____
End Time: _____
Homogenization
Time (Min.): _____

Jar#: _____
Jar/Vial Size: _____ mL
Initial Weight: _____ g
Final Weight: _____ g
Net Weight: _____ g

Cone#: _____
Final Vol: _____ mL
Initial Weight: _____ g
Final Weight: _____ g
Net Weight: _____ g
Sample ID: _____

Appearance/Narrative:

~~WFC~~^{HNF} SD-WM-DP-201, REV. 1

INORGANIC ANALYSIS

~~WHC~~^{HNF} SD-WM-DP-201, REV. 1

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LABCORE Completed Worklist Report for Worklist# 14012

Analyst: kgh

Instrument: IC01

Book# 36N2k-A

Method: (A-53/05) Rev/Mod D-1

Worklist Comment: B-109 IC. RCJ

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 CCB	0	@IC-QC F	QC	1	<1.20e-2		ug/mL
1 CCB	0	@IC-QC CL	QC	1	<1.70e-2		ug/mL
1 CCB	0	@IC-QC NO2	QC	1	<1.08e-1		ug/mL
1 CCB	0	@IC-QC BR	QC	1	<1.25e-1		ug/mL
1 CCB	0	@IC-QC NO3	QC	1	1.46e-01	0.146	ug/mL
1 CCB	0	@IC-QC PO4	QC	1	<1.20e-1		ug/mL
1 CCB	0	@IC-QC SO4	QC	1	<1.38e-1		ug/mL
1 CCB	0	@IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2 CCV	0	@IC-QC F	QC	5.900e1	6.24e+01	105.763 % Recovery	
2 CCV	0	@IC-QC CL	QC	7.900e1	8.03e+01	101.646 % Recovery	
2 CCV	0	@IC-QC NO2	QC	5.390e2	5.45e+02	101.113 % Recovery	
2 CCV	0	@IC-QC BR	QC	5.890e2	5.81e+02	98.642 % Recovery	
2 CCV	0	@IC-QC NO3	QC	5.940e2	6.18e+02	104.040 % Recovery	
2 CCV	0	@IC-QC PO4	QC	5.440e2	5.43e+02	99.816 % Recovery	
2 CCV	0	@IC-QC SO4	QC	6.310e2	6.45e+02	102.219 % Recovery	
2 CCV	0	@IC-QC OXALATE2	QC	5.280e2	5.53e+02	104.735 % Recovery	
3 BLNK-PREP	0	@IC-01 F-02	SOLID	1	<1.20e-2		ug/g
3 BLNK-PREP	0	@IC-01 CL-02	SOLID	1	3.50e-02	0.035	ug/g
3 BLNK-PREP	0	@IC-01 NO2-02	SOLID	1	<1.08e-1		ug/g
3 BLNK-PREP	0	@IC-01 BR-02	SOLID	1	<1.25e-1		ug/g
3 BLNK-PREP	0	@IC-01 NO3-02	SOLID	1	<1.39e-1		ug/g
3 BLNK-PREP	0	@IC-01 PO4-02	SOLID	1	<1.20e-1		ug/g
3 BLNK-PREP	0	@IC-01 SO4-02	SOLID	1	<1.38e-1		ug/g
3 BLNK-PREP	0	@IC-01 OXALATE2	SOLID	1	<1.05e-1		ug/g
4 SAMPLE	S96T005126	0 W @IC-01 F-02	SOLID	N/A	4.700e+04	234.900	ug/g
4 SAMPLE	S96T005126	0 W @IC-01 CL-02	SOLID	N/A	1.144e+03	332.900	ug/g
4 SAMPLE	S96T005126	0 W @IC-01 NO2-02	SOLID	N/A	5.483e+03	2115.000	ug/g
4 SAMPLE	S96T005126	0 W @IC-01 BR-02	SOLID	N/A	< 2.448e+03	2447.000	ug/g
4 SAMPLE	S96T005126	0 W @IC-01 NO3-02	SOLID	N/A	2.539e+05	2722.000	ug/g
4 SAMPLE	S96T005126	0 W @IC-01 PO4-02	SOLID	N/A	2.542e+04	2349.000	ug/g
4 SAMPLE	S96T005126	0 W @IC-01 SO4-02	SOLID	N/A	1.903e+05	2702.000	ug/g
4 SAMPLE	S96T005126	0 W @IC-01 OXALATE2	SOLID	N/A	< 2.056e+03	2056.000	ug/g
5 DUP	S96T005126	0 W @IC-01 F-02	SOLID	4.70e+04	4.72e+04	0.425	RPD
5 DUP	S96T005126	0 W @IC-01 CL-02	SOLID	1.14e+03	1.15e+03	0.873	RPD
5 DUP	S96T005126	0 W @IC-01 NO2-02	SOLID	5.48e+03	5.84e+03	6.360	RPD
5 DUP	S96T005126	0 W @IC-01 BR-02	SOLID	<2.45e3	<2.49e3		RPD
5 DUP	S96T005126	0 W @IC-01 NO3-02	SOLID	2.54e+05	2.59e+05	1.949	RPD
5 DUP	S96T005126	0 W @IC-01 PO4-02	SOLID	2.54e+04	2.44e+04	4.016	RPD
5 DUP	S96T005126	0 W @IC-01 SO4-02	SOLID	1.90e+05	1.89e+05	0.528	RPD
5 DUP	S96T005126	0 W @IC-01 OXALATE2	SOLID	<2.06e3	<2.09e3		RPD
6 SPK	S96T005126	0 W @IC-01 F-02	SOLID	5.900e1	5.97e+01	101.186 % Recovery	

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Completed Worklist Report for Worklist# 14012

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
6 SPK	S96T005126	0 W @IC-01 CL-02	SOLID	7.900e1	7.76e+01	98.228 %	Recovery
6 SPK	S96T005126	0 W @IC-01 NO2-02	SOLID	5.390e2	5.11e+02	94.805 %	Recovery
6 SPK	S96T005126	0 W @IC-01 BR-02	SOLID	5.890e2	5.66e+02	96.095 %	Recovery
6 SPK	S96T005126	0 W @IC-01 NO3-02	SOLID	5.940e2	6.63e+02	111.616 %	Recovery
6 SPK	S96T005126	0 W @IC-01 PO4-02	SOLID	5.440e2	5.35e+02	98.346 %	Recovery
6 SPK	S96T005126	0 W @IC-01 SO4-02	SOLID	6.310e2	6.52e+02	103.328 %	Recovery
6 SPK	S96T005126	0 W @IC-01 OXALATE2	SOLID	5.280e2	5.52e+02	104.545 %	Recovery
7 SAMPLE	S96T005145	0 W @IC-01 F-02	SOLID	N/A	4.484e+04	239.100	ug/g
7 SAMPLE	S96T005145	0 W @IC-01 CL-02	SOLID	N/A	1.081e+03	338.800	ug/g
7 SAMPLE	S96T005145	0 W @IC-01 NO2-02	SOLID	N/A	5.446e+03	2152.000	ug/g
7 SAMPLE	S96T005145	0 W @IC-01 BR-02	SOLID	N/A	2.491e+03	2491.000	ug/g
7 SAMPLE	S96T005145	0 W @IC-01 NO3-02	SOLID	N/A	1.444e+05	2769.000	ug/g
7 SAMPLE	S96T005145	0 W @IC-01 PO4-02	SOLID	N/A	7.990e+04	2391.000	ug/g
7 SAMPLE	S96T005145	0 W @IC-01 SO4-02	SOLID	N/A	1.342e+05	2749.000	ug/g
7 SAMPLE	S96T005145	0 W @IC-01 OXALATE2	SOLID	N/A	2.092e+03	2092.000	ug/g
8 DUP	S96T005145	0 W @IC-01 F-02	SOLID	4.48e-04	4.75e+04	5.850	RPD
8 DUP	S96T005145	0 W @IC-01 CL-02	SOLID	1.08e-03	8.97e+02	18.513	RPD
8 DUP	S96T005145	0 W @IC-01 NO2-02	SOLID	5.45e-03	5.59e+03	2.536	RPD
8 DUP	S96T005145	0 W @IC-01 BR-02	SOLID	<2.49e3	<2.50e3		RPD
8 DUP	S96T005145	0 W @IC-01 NO3-02	SOLID	1.44e-05	1.51e+05	4.746	RPD
8 DUP	S96T005145	0 W @IC-01 PO4-02	SOLID	7.99e-04	7.01e+04	13.067	RPD
8 DUP	S96T005145	0 W @IC-01 SO4-02	SOLID	1.34e-05	1.53e+05	13.240	RPD
8 DUP	S96T005145	0 W @IC-01 OXALATE2	SOLID	<2.09e3	<2.10e3		RPD
10 DUP	S96T005146	0 W @IC-01 F-02	SOLID	4.07e+04	2.44e+04	50.077	RPD
10 DUP	S96T005146	0 W @IC-01 CL-02	SOLID	1.07e+03	6.08e+02	55.066	RPD
10 DUP	S96T005146	0 W @IC-01 NO2-02	SOLID	4.83e+03	4.54e+03	6.190	RPD
10 DUP	S96T005146	0 W @IC-01 BR-02	SOLID	<2.43e3	<2.47e3		RPD
10 DUP	S96T005146	0 W @IC-01 NO3-02	SOLID	2.58e+05	4.83e+04	136.925	RPD
10 DUP	S96T005146	0 W @IC-01 PO4-02	SOLID	1.28e+04	1.92e+05	175.000	RPD
10 DUP	S96T005146	0 W @IC-01 SO4-02	SOLID	1.60e+05	1.26e+04	170.800	RPD
10 DUP	S96T005146	0 W @IC-01 OXALATE2	SOLID	<2.04e3	<2.08e3		RPD

Final page for worklist# 14012

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature _____ Date _____

A-0010-IC				DATA FILE/WORKLIST RESOLUTION				11-Dec-96			
Worklist#: 14012				Data File: 14012DEC.CSV							
		Seq	Type	Sample #			Seq#	Data File	Sample Name	Dilution	
-	=>	1	CCB		-	1	96121031.d01	BLANK		1.00	
	=>	2	CCV			2	96121031.d02	36N20-A STD		101.00	
	=>	3	BLNK-PREP			3	96121031.d03	BLANK-PREP		1.00	
	=>	4	SAMPLE	S96T005126		4	96121031.d04	S96T005126 SAM		101.00	
	=>	5	DUP	S96T005126		5	96121031.d05	S96T005126 DUP		101.00	
	=>	6	SPK	S96T005126		6	96121031.d06	S96T005126 SPK		101.00	
	=>	7	SAMPLE	S96T005145		7	96121031.d07	S96T005145 SAM		101.00	
	=>	8	DUP	S96T005145		8	96121031.d08	S96T005145 DUP		101.00	
	=>	9	SAMPLE	S96T005146		9	96121031.d09	S96T005146SAM		101.00	
	=>	10	DUP	S96T005146		10	96121031.d10	S96T005146DUP		101.00	
+					+						

Save (F4) Abort (Shift-F3) ListFiles (Shift-F1) UploadFile (F8)

10/14/96 14:12
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 14012

Analyst: KCN Instrument: IC0

Book# 360120-A

Method: LA-533-105 Rev/Mod

Worklist Comment: B-109 IC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 BLNK-PREP			@IC-01	SOLID		
4 SAMPLE	S96T005126 0 W		@IC-01	SOLID	96001238	B-109
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
5 DUP	S96T005126 0 W		@IC-01	SOLID		
6 SPK	S96T005126 0 W		@IC-01	SOLID		
7 SAMPLE	S96T005145 0 W		@IC-01	SOLID	96001238	B-109
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
8 DUP	S96T005145 0 W		@IC-01	SOLID		
9 SAMPLE	S96T005146 0 W		@IC-01	SOLID	96001238	B-109
Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02						
10 DUP	S96T005146 0 W		@IC-01	SOLID		

Final page for worklist # 14012

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

Run S96T005146 for 1000 RPDs.
105

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

77

```

=====
Sample Name: BLANK                      Date: 12/11/1996 02:09:00
Data File  : C:\DX\DATA\96121031.D01
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 1      Detector: CDM-1
Analyst    : g. w. l. j. Column: AG4A/AS4A anion column
=====

```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1    3000  5Hz   0.00 10.00      50
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	3.57	nitrate	0.146	172	1197	1	-0.37
2	6.77	sulfate	-0.023	48	667	1	2.42
Totals			0.122	219	1864		

File: 96121031.D01 Sample: BLANK

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 78 TO 87.

```

=====
Sample Name: 36N20-A STD                      Date: 12/11/1996 02:20:44
Data File  : C:\DX\DATA\96121031.D02
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 2           Detector: CDM-1
Analyst    : Dustin Hughes Column: AG4A/AS4A anion column
=====

```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000   5Hz   0.00 10.00        50
-----

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time Name	Concentration ug/ml	Height	Area	Bl. %Delta Code
1	0.92	0.000	31	120	2
2	1.10 fluoride	62.434	1032	8289	2 1.85
3	1.67 chloride	80.308	1839	10104	1 0.40
4	2.00 nitrite	545.161	6675	45798	1 -1.64
5	3.04 bromide	581.325	5000	33962	1 -2.25
6	3.47 nitrate	617.797	5751	48691	1 -3.17
7	5.07 phosphate	543.055	1667	21673	1 2.15
8	6.61 sulfate	644.826	3831	68440	1 0.00
9	8.80 oxalate	553.479	2165	42361	1 1.23
Totals		3628.385	27991	279437	

File: 96121031.D02 Sample: 36N20-A STD

```

=====
Sample Name: BLANK-PREP                      Date: 12/11/1996 02:31:52
Data File  : C:\DX\DATA\96121031.D03
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 3          Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====
  
```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          1    3000  5Hz   0.00 10.00          50
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.31		0.000	29	171	1	
2	1.72	chloride	0.035	26	385	1	3.20
3	3.57	nitrate	0.038	50	355	1	-0.19
Totals			0.073	106	910		

File: 96121031.D03 Sample: BLANK-PREP

```

=====
Sample Name: S96T005126 SAM                      Date: 12/11/1996 02:43:41
Data File  : C:\DX\DATA\96121031.D04
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 4                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====
  
```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000  5Hz   0.00 10.00      50
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.93		0.000	18	57	1	
2	1.09	fluoride	242.448	5322	36607	1	0.62
3	1.70	chloride	5.903	138	685	1	2.00
4	2.04	nitrite	28.281	183	1215	1	0.33
5	3.43	nitrate	1309.371	11934	104898	1	-4.28
6	5.07	phosphate	131.099	327	4899	1	2.15
7	6.61	sulfate	981.728	6568	104789	1	0.00
Totals			2698.831	24490	253151		

File: 96121031.D04 Sample: S96T005126 SAM

```

=====
Sample Name: S96T005126 DUP                      Date: 12/11/1996 02:57:56
Data File  : C:\DX\DATA\96121031.D05
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 5                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====
  
```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000  5Hz   0.00 10.00         50
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.92		0.000	20	61	1	
2	1.09	fluoride	239.980	5284	36189	1	0.62
3	1.69	chloride	5.824	133	675	1	1.60
4	2.03	nitrite	29.641	186	1331	1	0.00
5	3.42	nitrate	1314.528	11941	105325	1	-4.47
6	5.07	phosphate	123.813	313	4607	1	2.15
7	6.61	sulfate	959.784	6667	102398	1	0.00
Totals			2673.569	24545	250585		

File: 96121031.D05 Sample: S96T005126 DUP

```

=====
Sample Name: S96T005126 SPK                      Date: 12/11/1996 03:08:53
Data File  : C:\DX\DATA\96121031.D06
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 6                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====
  
```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
=====
External          1          101    3000  5Hz    0.00 10.00          50
=====
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	44	142	1	
2	1.09	fluoride	302.117	7162	47019	1	0.62
3	1.67	chloride	83.488	1916	10512	1	0.40
4	2.00	nitrite	539.426	6714	45297	1	-1.64
5	3.03	bromide	565.915	4974	33029	1	-2.68
6	3.39	nitrate	1972.118	17390	160692	1	-5.21
7	5.07	phosphate	666.474	2128	26785	1	2.15
8	6.56	sulfate	1634.085	10348	177477	1	-0.81
9	8.75	oxalate	551.504	1968	42207	1	0.61
Totals			6315.125	52644	543160		

File: 96121031.D06 Sample: S96T005126 SPK

```

=====
Sample Name: S96T005145 SAM                      Date: 12/11/1996 04:27:00
Data File  : C:\DX\DATA\96121031.D07
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 7                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====
  
```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000  5Hz   0.00 10.00          50
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.09	fluoride	227.292	4919	34056	1	0.62
3	1.70	chloride	5.482	123	632	1	2.00
4	2.04	nitrite	27.606	177	1158	1	0.33
5	3.45	nitrate	732.032	6885	57842	1	-3.54
6	5.07	phosphate	405.037	1254	16004	1	2.15
7	6.61	sulfate	680.226	4789	72224	1	0.00
Totals			2077.675	18148	181915		

File: 96121031.D07 Sample: S96T005145 SAM

```

=====
Sample Name: S96T005145 DUP                      Date: 12/11/1996 04:40:46
Data File  : C:\DX\DATA\96121031.D08
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 8                Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====

```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000  5Hz   0.00 10.00      50
=====

```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.93		0.000	17	57	1	
2	1.09	fluoride	240.374	5300	36256	1	0.62
3	1.69	chloride	4.540	104	515	1	1.60
4	2.03	nitrite	28.259	174	1213	1	0.00
5	3.45	nitrate	761.544	7163	60215	1	-3.54
6	5.07	phosphate	354.824	1123	13954	1	2.15
7	6.61	sulfate	772.943	5561	82173	1	0.00
Totals			2162.484	19442	194382		

File: 96121031.D08 Sample: S96T005145 DUP

```

=====
Sample Name: S96T005146SAM                      Date: 12/11/1996 04:54:24
Data File  : C:\DX\DATA\96121031.D09
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 9              Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====
  
```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000  5Hz   0.00 10.00      50
=====
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.91		0.000	16	53	1	
2	1.09	fluoride	211.444	4516	31425	1	0.62
3	1.69	chloride	5.567	124	643	1	1.60
4	2.04	nitrite	25.117	145	945	1	0.33
5	3.42	nitrate	1338.161	12253	107281	1	-4.47
6	5.07	phosphate	66.716	177	2317	1	2.15
7	6.61	sulfate	830.214	6115	88347	1	0.00
Totals			2477.220	23347	231011		

File: 96121031.D09 Sample: S96T005146SAM

```

=====
Sample Name: S96T005146DUP                      Date: 12/11/1996 05:08:12
Data File  : C:\DX\DATA\96121031.D10
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 10              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====
  
```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          101    3000  5Hz   0.00 10.00      50
=====
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.09	fluoride	124.535	2306	17608	1	1.23
3	1.70	chloride	3.106	64	335	1	2.00
4	2.04	nitrite	23.161	112	778	1	0.33
5	3.49	nitrate	246.745	2343	19310	1	-2.42
6	5.01	phosphate	979.202	3012	39927	1	1.08
7	6.67	sulfate	64.106	468	7509	1	0.81
Totals			1440.856	8305	85468		

File: 96121031.D10 Sample: S96T005146DUP

LABCORE Completed Worklist Report for Worklist# 15573

Analyst: eal

Instrument: IC01

Book# 36N20B

Method: LA533105 Rev/Mod D-1

Worklist Comment: @IC-01 FOR B-109

RTS!

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	CCB	0	@IC-QC F	QC	1	<1.20e-2		ug/mL
1	CCB	0	@IC-QC CL	QC	1	<1.70e-2		ug/mL
1	CCB	0	@IC-QC NO2	QC	1	<1.08e-1		ug/mL
1	CCB	0	@IC-QC BR	QC	1	<1.25e-1		ug/mL
1	CCB	0	@IC-QC NO3	QC	1	<1.39e-1		ug/mL
1	CCB	0	@IC-QC PO4	QC	1	<1.20e-1		ug/mL
1	CCB	0	@IC-QC SO4	QC	1	<1.38e-1		ug/mL
1	CCB	0	@IC-QC OXALATE2	QC	1	<1.05e-1		ug/mL
2	CCV	0	@IC-QC F	QC	5.90e01	5.56e+01	94.237 % Recovery	
2	CCV	0	@IC-QC CL	QC	7.90e01	7.67e+01	97.089 % Recovery	
2	CCV	0	@IC-QC NO2	QC	5.52e02	5.31e+02	96.196 % Recovery	
2	CCV	0	@IC-QC BR	QC	5.89e02	5.84e+02	99.151 % Recovery	
2	CCV	0	@IC-QC NO3	QC	5.94e02	5.80e+02	97.643 % Recovery	
2	CCV	0	@IC-QC PO4	QC	5.44e02	5.47e+02	100.551 % Recovery	
2	CCV	0	@IC-QC SO4	QC	6.31e02	6.35e+02	100.634 % Recovery	
2	CCV	0	@IC-QC OXALATE2	QC	5.52e02	5.82e+02	105.435 % Recovery	
3	BLNK-PREP	0	@IC-01 F-02	SOLID	1	<1.20e-2		ug/g
3	BLNK-PREP	0	@IC-01 CL-02	SOLID	1	2.60e-02	0.026	ug/g
3	BLNK-PREP	0	@IC-01 NO2-02	SOLID	1	<1.08e-1		ug/g
3	BLNK-PREP	0	@IC-01 BR-02	SOLID	1	<1.25e-1		ug/g
3	BLNK-PREP	0	@IC-01 NO3-02	SOLID	1	<1.39e-1		ug/g
3	BLNK-PREP	0	@IC-01 PO4-02	SOLID	1	<1.20e-1		ug/g
3	BLNK-PREP	0	@IC-01 SO4-02	SOLID	1	<1.38e-1		ug/g
3	BLNK-PREP	0	@IC-01 OXALATE2	SOLID	1	<1.05e-1		ug/g
4	SAMPLE	S96T005146	0 W @IC-01 F-02	SOLID	N/A	4.852e+04	117.800	ug/g
4	SAMPLE	S96T005146	0 W @IC-01 CL-02	SOLID	N/A	1.026e+03	166.800	ug/g
4	SAMPLE	S96T005146	0 W @IC-01 NO2-02	SOLID	N/A	4.291e+03	1060.000	ug/g
4	SAMPLE	S96T005146	0 W @IC-01 BR-02	SOLID	N/A	1.227e+03	1227.000	ug/g
4	SAMPLE	S96T005146	0 W @IC-01 NO3-02	SOLID	N/A	3.403e+05	1364.000	ug/g
4	SAMPLE	S96T005146	0 W @IC-01 PO4-02	SOLID	N/A	1.530e+04	1178.000	ug/g
4	SAMPLE	S96T005146	0 W @IC-01 SO4-02	SOLID	N/A	2.058e+05	1354.000	ug/g
4	SAMPLE	S96T005146	0 W @IC-01 OXALATE2	SOLID	N/A	1.030e+03	1030.000	ug/g
5	DUP	S96T005146	0 W @IC-01 F-02	SOLID	4.85e+04	5.01e+04	3.245	RPD
5	DUP	S96T005146	0 W @IC-01 CL-02	SOLID	1.03e+03	1.11e+03	7.477	RPD
5	DUP	S96T005146	0 W @IC-01 NO2-02	SOLID	4.29e+03	4.42e+03	2.985	RPD
5	DUP	S96T005146	0 W @IC-01 BR-02	SOLID	<1.23e3	<1.25e3		RPD
5	DUP	S96T005146	0 W @IC-01 NO3-02	SOLID	3.40e+05	3.43e+05	0.878	RPD
5	DUP	S96T005146	0 W @IC-01 PO4-02	SOLID	1.53e+04	1.63e+04	6.329	RPD
5	DUP	S96T005146	0 W @IC-01 SO4-02	SOLID	2.06e+05	2.11e+05	2.398	RPD
5	DUP	S96T005146	0 W @IC-01 OXALATE2	SOLID	<1.03e3	<1.05e3		RPD
6	SPK	S96T005146	0 W @IC-01 F-02	SOLID	5.90e01	4.59e+01	77.797 % Recovery	

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Completed Worklist Report for Worklist# 15573

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
6	SPK	S96T005146	0	W	@IC-01	CL-02	SOLID	7.90e01	7.67e+01	97.089 % Recovery
6	SPK	S96T005146	0	W	@IC-01	NO2-02	SOLID	5.52e02	5.19e+02	94.022 % Recovery
6	SPK	S96T005146	0	W	@IC-01	BR-02	SOLID	5.89e02	5.43e+02	92.190 % Recovery
6	SPK	S96T005146	0	W	@IC-01	NO3-02	SOLID	5.94e02	5.17e+02	87.037 % Recovery
6	SPK	S96T005146	0	W	@IC-01	PO4-02	SOLID	5.44e02	5.47e+02	100.551 % Recovery
6	SPK	S96T005146	0	W	@IC-01	SO4-02	SOLID	6.31e02	6.75e+02	106.973 % Recovery
6	SPK	S96T005146	0	W	@IC-01	OXALATE2	SOLID	5.52e02	5.74e+02	103.986 % Recovery

Final page for worklist# 15573

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

H. Anasto
Reviewer Signature

12-26-96
Date

Validated

LABCORE Data Entry Template for Worklist# 15573

Analyst: EAL Instrument: IC0 1 Book# 364208
Method: LA-533-105 Rev/Mod D1
Worklist Comment: @IC-01 FOR B-109 RTS!

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 CCB			@IC-QC	QC		
2 CCV			@IC-QC	QC		
3 BLNK-PREP			@IC-01	SOLID		
4 SAMPLE	S96T005146 0 W	@IC-01	SOLID	96001238 B-109		
	Analytes Requested: BR-02 , CL-02 , F-02 , NO2-02 , NO3-02 , OXALATE2, PO4-02 , SO4-02					
5 DUP	S96T005146 0 W	@IC-01	SOLID			
6 SPK	S96T005146 0 W	@IC-01	SOLID			

Final page for worklist # 15573

A. Lombel 12.21.96
Analyst Signature Date

Analyst Signature Date

15573DC.CSV in shell
15573DC2.CSV in shell (Corrected) 12.26.96
uploaded 12.26.96 by Hla

Data Entry Comments:

Possible organic acid interference with
the determination of F. Hla 12.26.96

A-0010-IC				DATA FILE/WORKLIST RESOLUTION				26-Dec-96			
Worklist#: 15573				Data File: 15573DC.CSV							
		Seq	Type	Sample #	Seq#		Data File	Sample Name		Dilution	
-	=>	1	CCB	S96T005146	-	1	96122101.d07	INST. BLANK		1.00	
	=>	2	CCV			2	96122101.d08	36N20-B STD.		101.00	
	=>	3	BLNK-PREP			4	96122101.d09	S96T005146		51.00	
	=>	4	SAMPLE			5	96122101.d10	S96T005146 DUP		51.00	
	=>	5	DUP			6	96122101.d11	S96T005146 SPIK		51.00	
	=>	6	SPK			3	96122101.d12	PREP. BLANK		1.00	
+					+						

Save (F4) Abort (Shift-F3) ListFiles (Shift-F1) UploadFile (F8)

```

=====
Sample Name: INST. BLANK                      Date: 12/21/1996 11:45:06
Data File  : C:\DX\DATA\96122101.D07
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 7           Detector: CDM-1
Analyst    : John Jay Column: AG4A/AS4A anion column
=====

```

Nov 2 AL 11/7/97

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	3000	5Hz	0.00	10.00		50

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
2	1.71	chloride	0.012	22	101	1	2.40
3	3.53	nitrate	0.049	59	437	1	-1.30
Totals			0.061	81	538		

File: 96122101.D07 Sample: INST. BLANK

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 92 TO 97.


```

=====
Sample Name: 36N20-B STD.                      Date: 12/21/1996 12:02:31
Data File  : C:\DX\DATA\96122101.D08
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 8             Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====
  
```

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 101 3000 5Hz 0.00 10.00 50

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.93		0.000	25	83	1	
2	1.11	fluoride	55.582	1081	7285	1	3.09
3	1.67	chloride	76.742	1793	9647	1	0.40
4	1.99	nitrite	530.671	6531	44534	1	-1.97
5	3.00	bromide	584.412	4989	34149	1	-3.54
6	3.43	nitrate	580.450	5556	45710	1	-4.28
7	4.96	phosphate	546.564	1688	21817	1	0.00
8	6.51	sulfate	635.184	4668	67411	1	-1.61
9	8.59	oxalate	582.005	2287	44592	1	-1.23
Totals			3591.609	28620	275229		

File: 96122101.D08 Sample: 36N20-B STD.

```

=====
Sample Name: PREP. BLANK                      Date: 12/21/1996 13:00:01
Data File  : C:\DX\DATA\96122101.D12
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 12          Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====
  
```

Calibration Volume Dilution Points Rate Start Stop Area Reject

External 1 1 3000 5Hz 0.00 10.00 50

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.27		0.000	85	569	1	
2	1.71	chloride	0.026	31	270	1	2.40
3	3.53	nitrate	0.041	57	379	1	-1.49
Totals			0.067	173	1217		

File: 96122101.D12 Sample: PREP. BLANK

Data Reprocessed On 12/26/1996 09:27:42

HNF

```

=====
Sample Name: S96T005146                      Date: 12/21/1996 12:17:15
Data File  : F:\DATA\96122101.D09
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 9           Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====
  
```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
=====
External          1           51    3000  5Hz   0.00 10.00          50
=====
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.92		0.000	33	95	1	
2	1.09	fluoride	252.156	14137	87160	1	0.62
3	1.69	chloride	5.330	250	1267	1	1.20
4	2.02	nitrite	22.299	380	2570	1	-0.66
5	3.31	nitrate	1768.663	29835	298026	1	0.10
6	4.96	phosphate	79.507	425	5960	1	0.00
7	6.40	sulfate	1069.662	13825	233607	1	-3.23
Totals			3197.619	58885	628685		

File: 96122101.D09 Sample: S96T005146

Data Reprocessed On 12/26/1996 09:28:30

```

=====
Sample Name: S96T005146  DUP                      Date: 12/21/1996 12:28:42
Data File  : F:\DATA\96122101.D10
Method     : C:\DX\METHOD\KIT.MET
ACI Address: 1  System: 1  Inject#: 10              Detector: CDM-1
Analyst    :                      Column: AG4A/AS4A anion column
=====
  
```

```

-----
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1          51    3000  5Hz   0.00 10.00          50
-----
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.93		0.000	32	88	1	
2	1.09	fluoride	255.689	14125	88811	1	0.62
3	1.69	chloride	5.660	253	1349	1	1.20
4	2.02	nitrite	22.554	376	2613	1	-0.66
5	3.31	nitrate	1748.510	29737	294273	1	0.10
6	4.96	phosphate	83.350	419	6266	1	0.00
7	6.40	sulfate	1075.779	13751	235037	1	-3.23
Totals			3191.542	58693	628438		

File: 96122101.D10 Sample: S96T005146 DUP

Data Reprocessed On 12/26/1996 09:29:20

```

=====
Sample Name: S96T005146 SPIKE                      Date: 12/21/1996 12:42:12
Data File  : F:\DATA\96122101.D11
Method     : C:\DK\METHOD\KIT.MET
ACI Address: 1 System: 1 Inject#: 11                 Detector: CDM-1
Analyst    :                               Column: AG4A/AS4A anion column
=====
  
```

```

=====
Calibration Volume Dilution Points Rate Start Stop Area Reject
-----
External          1           51  3000  5Hz   0.00 10.00          50
=====
  
```

***** Peak Report: All Peaks *****

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	0.92		0.000	39	108	1	
2	1.09	fluoride	275.116	16159	98290	1	0.62
3	1.67	chloride	43.665	2017	10896	1	0.00
4	1.99	nitrite	281.835	6871	46930	1	-2.30
5	2.99	bromide	271.648	5083	31339	1	-3.75
6	3.29	nitrate	2027.233	34442	347091	1	0.10
7	4.93	phosphate	352.782	2111	28124	1	-0.54
8	6.40	sulfate	1407.130	21803	314535	1	-3.23
9	8.53	oxalate	287.024	2034	43529	1	-1.84
Totals			4946.433	90560	920843		

File: 96122101.D11 Sample: S96T005146 SPIKE

File # 0961216E.TXT HNF
WHG-SD-WM-DP-201, REV. 1

10/02/96 09:48
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 13594

Analyst: B. GOECKE Instrument: ICP01 Book# 64894B

Method: LA-505-151/161 Rev/Mod 8-1

Worklist Comment: ICP B-109 (DIRECT)

S Type	Sample#	R A Test	Matrix	Group#	Project
1	ICV	@ICP-QC	QC		
2	ICB	@ICP-QC	QC		
3	LLS	@ICP-QC	QC		
4	ICSA	@ICP-QC	QC		
5	ICSAB	@ICP-QC	QC		
6	SERDIL	S96T004933 0 D	@ICP-D01 LIQUID		
7	SAMPLE	S96T004933 0 D	@ICP-D01 LIQUID	96001238	B-109
Analytes Requested: AG-D-01, AL-D-01, AS-D-01, B-D-01, BA-D-01, BE-D-01, BI-D-01, CA-D-01, CD-D-01, CE-D-01, CO-D-01, CR-D-01, CU-D-01, FE-D-01, K-D-01, LA-D-01, LI-D-01, MG-D-01, MN-D-01, MO-D-01, NA-D-01, ND-D-01, NI-D-01, P-D-01, PB-D-01, S-D-01, SE-D-01, SI-D-01, SM-D-01, SR-D-01, TI-D-01, TL-D-01, U-D-01, V-D-01, ZN-D-01, ZR-D-01.					
8	DUP	S96T004933 0 D	@ICP-D01 LIQUID		
9	SPK	S96T004933 0 D	@ICP-D01 LIQUID		
10	CCV	S96T004933 0 D	@ICP-QC	QC	
11	CCB	S96T004933 0 D	@ICP-QC	QC	
12	SERDIL	S96T005116 0 D	@ICP-D01 LIQUID		
13	SAMPLE	S96T005116 0 D	@ICP-D01 LIQUID	96001238	B-109
Analytes Requested: AG-D-01, AL-D-01, AS-D-01, B-D-01, BA-D-01, BE-D-01, BI-D-01, CA-D-01, CD-D-01, CE-D-01, CO-D-01, CR-D-01, CU-D-01, FE-D-01, K-D-01, LA-D-01, LI-D-01, MG-D-01, MN-D-01, MO-D-01, NA-D-01, ND-D-01, NI-D-01, P-D-01, PB-D-01, S-D-01, SE-D-01, SI-D-01, SM-D-01, SR-D-01, TI-D-01, TL-D-01, U-D-01, V-D-01, ZN-D-01, ZR-D-01.					

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

10/02/96 09:48

A-0004-1

HNF
WHC-SD-WM-DP-201, REV. 1

Page: 2

LABCORE Data Entry Template for Worklist# 13594

S Type	Sample#	R A	Test	Matrix	Group#	Project
			SM-D-01 , SR-D-01 ,	TI-D-01 , TL-D-01 ,	U-D-01 , V-D-01 ,	
			ZN-D-01 , ZR-D-01			
14 DUP	S96T005116	0 D	@ICP-D01	LIQUID		
15 SPK	S96T005116	0 D	@ICP-D01	LIQUID		10-9-96
16 ICSA			@ICP-QC	QC		
17 ICSAB			@ICP-QC	QC		
18 CCV			@ICP-QC	QC		
19 CCB			@ICP-QC	QC		

Final page for worklist # 13594

Analyst Signature

Date

Analyst Signature

Date

S96T004533 . S-1 - S-1-1

DF

20

4933-D . S-1 - S-1-1

20

S96T005116 . S-1 - 6-1

13

5116-D . S-1 - 6-1

13

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

HNF
WHC-SD-WM-DP-201, REV. 1

Analysis Report

Summary

Mon 12-16-96 04:53:06 PM

page 1

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	961216E	ICP2	12/16/96	15:52	BJG	Q	CONC
2	ICB	961216E	ICP2	12/16/96	15:55	BJG	Q	CONC
3	LLS	961216E	ICP2	12/16/96	15:58	BJG	Q	CONC
4	ICSA	961216E	ICP2	12/16/96	16:01	BJG	Q	CONC
5	ICSAB	961216E	ICP2	12/16/96	16:05	BJG	Q	CONC
6	S96T004933	961216E	ICP2	12/16/96	16:08	BJG	S	CONC
7	S96T004933_D	961216E	ICP2	12/16/96	16:11	BJG	S	CONC
8	S96T005116	961216E	ICP2	12/16/96	16:14	BJG	S	CONC
9	S96T005116_D	961216E	ICP2	12/16/96	16:16	BJG	S	CONC
10	ICSA	961216E	ICP2	12/16/96	16:19	BJG	Q	CONC
11	ICSAB	961216E	ICP2	12/16/96	16:24	BJG	Q	CONC
12	CCV	961216E	ICP2	12/16/96	16:27	BJG	Q	CONC
13	CCB	961216E	ICP2	12/16/96	16:30	BJG	Q	CONC

[Signature]

12-16-96

B-109 Direct

S96T004933, S96T005116

S96T004933, S96T005116

FILE# 0961216E.TXT

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 100 TO 103

HNF

WHC-SD-WM-DP-201, REV. 1

Analysis Report

Averages

Mon 12-16-96 04:53:06 PM

page 2

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.965	4.810	5.115	4.873	4.849	5.052
2	ICB	.0010	.0009	.0123	.0038	.0001	.0000
3	LLS	.0240	.1004	.2055	.0976	.0959	.0100
4	ICSA	.0015	240.9	.0280	.0017	.0003	.0003
5	ICSAB	.9542	237.8	.0298	.0019	.4596	.4698
6	S96T004933	.0157	.8829	.1356	.0570	.0677	.0009
7	S96T004933_D	-.0271	.5683	.0020	.0477	.0636	.0001
8	S96T005116	-.0134	.0063	-.0879	2.197	.0275	.0011
9	S96T005116_D	.0163	.1336	-.0533	1.914	.0270	-.0006
10	ICSA	.0012	237.5	-.0389	-.0019	.0003	.0000
11	ICSAB	.9586	237.0	-.0106	.0015	.4574	.4668
12	CCV	4.978	4.789	5.139	4.847	4.807	5.053
13	CCB	.0006	-.0047	.0024	.0029	.0001	.0002

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	4.975	5.073	5.044	4.911	5.066	5.065
2	ICB	-.0215	.0010	-.0006	.0049	-.0002	-.0012
3	LLS	.2049	.2177	.0106	.2004	.0392	.0205
4	ICSA	-.0142	250.0	-.0021	.0196	-.0007	.0073
5	ICSAB	.0122	248.4	.9343	.0166	.4646	.4781
6	S96T004933	-.3425	10.61	-.0079	.1793	-.0137	-.0278
7	S96T004933_D	-.1795	10.50	.0000	.0838	-.0421	-.0206
8	S96T005116	-.2735	20.15	-.0072	.0214	-.0368	-.0147
9	S96T005116_D	-.1180	18.29	.0056	.1509	-.0120	-.0045
10	ICSA	-.0107	250.4	.0005	.0249	-.0004	.0066
11	ICSAB	.0085	252.2	.9404	.0209	.4671	.4814
12	CCV	5.024	5.141	5.066	4.879	5.090	5.085
13	CCB	-.0164	-.0007	.0005	.0005	-.0006	-.0010

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.095	-.0001	5.000	4.725	4.977	4.857
2	ICB	-.0005	.0012	-.0002	-.0868	.0011	.0014
3	LLS	.0198	.0006	.1160	Q.3107	.0996	.0209
4	ICSA	-.0112	-.0273	93.94	-.1052	-.0035	.0032
5	ICSAB	.4630	-.0242	92.77	-.0391	-.0043	.9885
6	S96T004933	.0270	.0479	-.1433	-.3.032	.0251	1866.
7	S96T004933_D	-.0227	.0428	-.2110	-.1.699	-.0065	1861.
8	S96T005116	-.0090	.0342	-.1125	-.2.402	.0025	.0476
9	S96T005116_D	-.0119	.0318	-.0932	.0684	.0197	.0214
10	ICSA	-.0104	-.0300	93.14	-.0342	-.0035	.0044
11	ICSAB	.4562	-.0319	93.14	-.0541	-.0037	.9634
12	CCV	5.063	.0013	4.979	4.612	4.942	4.791
13	CCB	-.0003	.0015	.0005	-.0491	.0004	.0014

WHE SD-WM-DP-201, REV. 1

Analysis Report

Averages

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page 3

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.737	4.885	5.037	4.780	4.994	5.014
2	ICB	.0064	.0006	-.0025	.0113	.0004	-.0043
3	LLS	.1964	.0194	-.0990	.1987	.1914	.0427
4	ICSA	252.4	-.0065	-.0089	193.0	.0018	-.0039
5	ICSAB	248.9	.4405	-.0089	190.3	-.0034	.9197
6	S96T004933	.3468	.0105	.0310	22.99	-.0657	.1098
7	S96T004933_D	.1156	.0104	.0011	23.03	-.0909	.0894
8	S96T005116	4.165	.1001	-.0234	5.875	-.0384	.0055
9	S96T005116_D	3.708	.0921	-.0364	5.138	-.0273	.0084
10	ICSA	248.9	-.0058	-.0068	189.0	.0038	.0063
11	ICSAB	248.2	.4427	-.0104	188.0	.0005	.9334
12	CCV	4.705	4.896	5.058	4.743	4.956	5.034
13	CCB	.0012	.0007	.0004	.0125	-.0028	.0107

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	4.911	5.064	4.937	4.781	4.834	4.926
2	ICB	.0024	.0032	-.0013	.0063	.0256	.0057
3	LLS	.3926	.2186	.2047	.1045	.2244	.1491
4	ICSA	.0318	.0347	-.0154	.0168	-.0369	-.0014
5	ICSAB	.0211	1.009	-.0255	.0023	-.0260	.0042
6	S96T004933	-.0993	.0672	1.384	.1334	.8366	59.37
7	S96T004933_D	-.2124	.1433	1.271	.0077	.7709	59.51
8	S96T005116	.1696	.0086	14.96	.0343	.3601	7.936
9	S96T005116_D	.1131	.0942	14.29	.0086	.4993	7.075
10	ICSA	.0038	.0365	-.0303	.0158	-.0093	.0057
11	ICSAB	.0203	1.023	-.0331	.0092	-.0135	.0143
12	CCV	4.923	5.092	5.002	4.814	4.831	4.949
13	CCB	.0085	.0151	-.0024	.0024	.0477	.0096

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.793	4.847	.0401	4.831	4.813	9.432
2	ICB	.0154	.0001	-.0063	-.0007	.0087	.0634
3	LLS	.1994	.0197	-.0025	.0179	.3942	.4956
4	ICSA	.0049	.0018	.0120	-.0005	-.0360	.0585
5	ICSAB	.0109	.0018	.0095	.0005	-.0086	.0897
6	S96T004933	.3130	.1459	-.1062	-.0340	-.3221	1.408
7	S96T004933_D	.3827	.1469	-.2069	-.0296	-.1463	1.729
8	S96T005116	.1436	.0891	-.0886	-.0130	-.1784	.9212
9	S96T005116_D	.1880	.0812	-.0547	-.0221	-.1446	.9697
10	ICSA	.0211	.0021	.0107	-.0002	-.0297	.1069
11	ICSAB	.0271	.0020	.0092	.0007	-.0362	.1081
12	CCV	4.756	4.815	.0437	4.831	4.821	9.365
13	CCB	.0193	.0003	-.0081	-.0012	.0190	.0778

WHE SD-WM-DP-201, REV. 1

Analysis Report

Averages

Mon 12-16-96 04:53:06 PM

page 4

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.016	.0073	5.108	4.896
2	ICB	.0029	.0008	-.0003	.0024
3	LLS	.1014	.0007	.0217	.0211
4	ICSA	.0002	.0073	.0043	-.0034
5	ICSAB	.4627	.0076	.9536	-.0016
6	S96T004933	.0941	.0182	-1.231	.0677
7	S96T004933 D	.0867	.0196	-1.228	.0817
8	S96T005116	.0375	.0098	.7217	.0362
9	S96T005116 D	.0444	.0108	.7339	.0291
10	ICSA	.0026	.0082	.0042	-.0010
11	ICSAB	.4688	.0085	.9615	.0007
12	CCV	5.019	.0080	5.154	4.876
13	CCB	.0040	.0009	-.0001	.0036

10/14/96 10:18
A-0004-1

WHC-SD-WM-DP-201, REV. 1

Page: 1

LABCORE Data Entry Template for Worklist# 13963

Analyst: J. WORRELL Instrument: ICP01Book# 52848BMethod: LA-505-151/161 Rev/Mod D-3Worklist Comment: QW 11-19-96 ICP B-109 (FUSION)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	LLS		@ICP-QC	QC		
4	ICSA		@ICP-QC	QC		
5	ICSAB		@ICP-QC	QC		
6	PREPBLK TOX ARL		@ICP-F01	SOLID		
7	SERDIL		@ICP-F01	SOLID		
8	SAMPLE	S96T005121 0 F	@ICP-F01	SOLID	96001238 B-109	
Analytes Requested:						
AG-F-01, AL-F-01, AS-F-01, B-F-01, BA-F-01, BE-F-01, BI-F-01, CA-F-01, CD-F-01, CE-F-01, CO-F-01, CR-F-01, CU-F-01, FE-F-01, K-F-01, LA-F-01, LI-F-01, MG-F-01, MN-F-01, MO-F-01, NA-F-01, ND-F-01, NI-F-01, P-F-01, PB-F-01, S-F-01, SB-F-01, SE-F-01, SI-F-01, SM-F-01, SR-F-01, TI-F-01, TL-F-01, U-F-01, V-F-01, ZN-F-01, ZR-F-01						
9	DUP	S96T005121 0 F	@ICP-F01	SOLID		
10	SPK	S96T005121 0 F	@ICP-F01	SOLID		
10.5	CCV		@ICP-QC	QC		
11	CCV		@ICP-QC	QC		
12	CCB		@ICP-QC	QC		
13	SAMPLE	S96T005139 0 F	@ICP-F01	SOLID	96001238 B-109	
Analytes Requested:						
AG-F-01, AL-F-01, AS-F-01, B-F-01, BA-F-01, BE-F-01, BI-F-01, CA-F-01, CD-F-01, CE-F-01, CO-F-01, CR-F-01, CU-F-01, FE-F-01, K-F-01, LA-F-01, LI-F-01, MG-F-01, MN-F-01, MO-F-01, NA-F-01, ND-F-01, NI-F-01, P-F-01, PB-F-01, S-F-01, SB-F-01, SE-F-01, SI-F-01						

Data Entry Comments:

Sample result calculation:

$$S96T005121 \text{ Al} = 165.644 \mu\text{g} \times \frac{1}{2.027 \frac{\text{g}}{\text{L}} \times \frac{1\text{L}}{1000\text{mL}}} = 8.2524 \frac{\mu\text{g}}{\text{g}}$$

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Note: $2.027 \frac{\text{g}}{\text{L}}$ is sample prep dilution factor.

10/14/96 10:18

A-0004-1

WHC-SD-WM-DP-201, REV. 1

HNF

Page: 2

LABCORE Data Entry Template for Worklist# 13963

S Type	Sample#	R A	Test	Matrix	Group#	Project
			SM-F-01 ,	SR-F-01 ,	TI-F-01 ,	TL-F-01 , U-F-01 , V-F-01 ,
			ZN-F-01 ,	ZR-F-01		
14 DUP	S96T005139	0 F	@ICP-F01	SOLID		
15 SAMPLE	S96T005140	0 F	@ICP-F01	SOLID	96001238	B-109
Analytes Requested:						
			AG-F-01 ,	AL-F-01 ,	AS-F-01 ,	B-F-01 , BA-F-01 ,
			BE-F-01 ,	BI-F-01 ,	CA-F-01 ,	CD-F-01 , CE-F-01 , CO-F-01 ,
			CR-F-01 ,	CU-F-01 ,	FE-F-01 ,	K-F-01 , LA-F-01 , LI-F-01 ,
			MG-F-01 ,	MN-F-01 ,	MO-F-01 ,	NA-F-01 , ND-F-01 , NI-F-01 ,
			P-F-01 ,	PB-F-01 ,	S-F-01 ,	SB-F-01 , SE-F-01 , SI-F-01 ,
			SM-F-01 ,	SR-F-01 ,	TI-F-01 ,	TL-F-01 , U-F-01 , V-F-01 ,
			ZN-F-01 ,	ZR-F-01		
16 DUP	S96T005140	0 F	@ICP-F01	SOLID		
17 ICSA			@ICP-QC	QC		
18 IC SAB			@ICP-QC	QC		
19 CCV			@ICP-QC	QC		
20 CCB			@ICP-QC	QC		

Final page for worklist # 13963

Joseph A. Powell
 Analyst Signature Date 11-19-96
 PREPBOOKARL .250-9.75
 W205121 DIL SY .250-9.75-2-8
 SAM .250-9.75
 DUP .250-9.75
 P.SPK .250-2-7.75
 10PPM P.SPK .250-1-1-7.75

Revised by:
Paul H. Peng
 Analyst Signature Date 11/20/96

S96T005139
 SAM .250-9.75
 DUP .250-9.75
 S96T005140
 SAM .250-9.75
 DUP .250-9.75

Data Entry Comments:

Spikes recovery calculation:

$$S96 T005121 \quad \text{Recovery} = \left(\frac{204.446}{40} \right) - \left(\frac{165.644}{40} \right) = 97.0\%$$

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WHC-SD-WM-DP-201, REV. 1

HNF

Identity 1: ICV Identity 2: Quality Control

10:20 AM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	4.949	4.973	5.094	4.703	4.948	4.935	5.213	5.227
S.D.	0.005	0.005	0.012	0.005	0.005	0.021	0.008	0.035
% R.S.D.	0.091	0.107	0.228	0.114	0.109	0.418	0.149	0.666
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	4.995	4.853	5.054	4.952	5.012	4.901	5.221	10.186
S.D.	0.005	0.020	0.004	0.011	0.003	0.019	0.016	0.049
% R.S.D.	0.103	0.408	0.077	0.217	0.055	0.397	0.315	0.477
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Nb (ppm)
Mean	4.877	5.109	5.079	4.999	4.902	4.818	5.013	5.088
S.D.	0.008	0.005	0.007	0.030	0.009	0.011	0.022	0.028
% R.S.D.	0.163	0.089	0.135	0.595	0.180	0.232	0.436	0.541
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	4.942	4.802	4.879	4.811	4.873	4.914	5.080	5.345
S.D.	0.026	0.003	0.012	0.042	0.005	0.006	0.008	0.026
% R.S.D.	0.532	0.066	0.243	0.877	0.103	0.124	0.150	0.485
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	4.879	4.808	5.010	5.136	4.690			
S.D.	0.013	0.015	0.008	0.006	0.024			
% R.S.D.	0.274	0.312	0.161	0.121	0.503			

J. L. Howell
11-19-96

5967005121, 5139 1/2 5140

8-109 FUSION

FILE No: 961119A.DAT

55T-5 = 52048B

WORKLIST No: 73963

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 106 TO 106

~~WHC~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: ICB Identity 2: Quality Control 10:23 AM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.001	0.001	0.010	-0.002	0.017	-0.001	0.002	0.001
S.D.	0.002	0.000	0.003	0.002	0.007	0.002	0.000	0.000
% R.S.D.	160.223	10.825	27.095	155.736	41.182	172.752	14.664	13.880

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.000	0.001	-0.003	-0.005	0.001	0.003	0.012	-0.062
S.D.	0.000	0.000	0.001	0.003	0.000	0.002	0.005	0.054
% R.S.D.	153.000	26.135	24.536	52.175	38.631	62.071	39.128	86.182

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.045	-0.003	0.001	0.015	0.003	0.001	0.000	0.015
S.D.	0.020	0.011	0.000	0.017	0.006	0.000	0.004	0.008
% R.S.D.	44.209	422.085	11.209	115.126	177.916	30.009	1026.103	50.918

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.001	-0.015	0.003	0.018	0.000	0.002	0.002	-0.023
S.D.	0.001	0.013	0.001	0.010	0.000	0.000	0.001	0.016
% R.S.D.	160.743	85.780	33.598	56.274	146.953	0.075	29.458	71.732

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.001	0.002	0.002	0.000	0.090
S.D.	0.000	0.021	0.001	0.000	0.035
% R.S.D.	0.636	1390.064	30.524	2.533	38.883

WHC SD-WM-DP-201, REV. 1

HNF

Identity 1: LLS

Identity 2: Quality Control

10:25 AM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.024	0.021	0.194	0.187	0.115	0.050	0.022	0.021
S.D.	0.002	0.000	0.008	0.004	0.004	0.004	0.000	0.000
% R.S.D.	6.601	0.744	4.005	2.119	3.693	6.956	2.205	1.456

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.022	0.046	0.101	0.100	0.216	0.023	0.183	0.479
S.D.	0.000	0.001	0.001	0.005	0.001	0.002	0.005	0.048
% R.S.D.	2.194	2.257	0.724	4.720	0.405	10.933	2.598	10.069

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.247	0.213	0.101	0.416	0.201	0.211	0.212	0.216
S.D.	0.012	0.010	0.000	0.010	0.007	0.001	0.006	0.008
% R.S.D.	4.698	4.672	0.329	2.440	3.495	0.435	2.841	3.543

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.102	0.176	0.021	0.206	0.022	0.011	0.110	0.703
S.D.	0.001	0.015	0.001	0.012	0.000	0.001	0.001	0.023
% R.S.D.	1.269	8.584	3.629	5.704	1.933	6.468	0.491	3.267

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.021	0.051	0.107	0.011	0.480
S.D.	0.000	0.021	0.002	0.000	0.025
% R.S.D.	0.927	42.486	1.650	2.316	5.308

HNF

WHC-SD-WM-DP-201, REV. 1

Identity 1: IC5A

Identity 2: Quality Control

10:29 AM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.005	0.003	-0.006	0.010	204.585	-0.003	-0.000	0.001
S.D.	0.000	0.000	0.013	0.002	0.521	0.002	0.000	0.000
% R.S.D.	8.097	1.715	237.076	15.957	0.255	69.531	8.550	29.086

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ce (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.006	0.010	0.009	96.861	104.475	-0.007	-0.043	0.162
S.D.	0.000	0.001	0.001	0.064	0.087	0.002	0.003	0.016
% R.S.D.	2.353	5.060	8.739	0.066	0.083	29.612	7.178	9.606

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.008	0.113	0.002	0.031	0.017	96.437	0.067	192.322
S.D.	0.004	0.002	0.000	0.005	0.006	0.427	0.009	0.489
% R.S.D.	52.354	1.947	2.510	14.793	33.433	0.442	13.206	0.254

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.002	0.016	-0.001	-0.031	0.003	0.002	0.012	0.058
S.D.	0.001	0.011	0.000	0.007	0.000	0.002	0.001	0.012
% R.S.D.	71.328	66.069	38.427	21.735	7.804	74.263	6.709	21.183

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.001	-0.023	-0.002	0.003	0.021
S.D.	0.000	0.032	0.001	0.000	0.006
% R.S.D.	27.199	136.967	42.955	7.903	26.724

~~HNE~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: ICSAB Identity 2: Quality Control

10:32 AM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.003	0.003	-0.015	0.013	201.688	0.487	0.507	0.968
S.D.	0.001	0.000	0.007	0.001	1.136	0.002	0.002	0.005
% R.S.D.	16.639	4.323	46.862	8.967	0.563	0.497	0.302	0.568

	Zn (ppm)	Mi (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.994	0.977	0.008	95.942	103.208	0.484	-0.050	0.161
S.D.	0.001	0.004	0.003	0.113	0.254	0.002	0.009	0.032
% R.S.D.	0.088	0.425	32.532	0.118	0.246	0.482	18.267	19.868

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.016	0.106	0.510	0.024	0.003	92.883	0.088	191.752
S.D.	0.008	0.004	0.002	0.017	0.012	0.454	0.007	1.376
% R.S.D.	49.635	4.185	0.403	69.159	440.083	0.489	8.436	0.718

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.001	0.060	1.021	0.937	0.002	0.981	0.012	-0.033
S.D.	0.001	0.015	0.001	0.014	0.000	0.001	0.001	0.010
% R.S.D.	196.991	24.652	0.093	1.468	4.133	0.075	10.163	29.533

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.491	0.034	0.497	0.498	0.037
S.D.	0.001	0.003	0.002	0.000	0.014
% R.S.D.	0.230	9.333	0.363	0.099	37.434

WHC-SD-WM-DP-201, REV. 1

Identity 1: prepblkarl Identity 2: .250ml-9.75ml

10:36 AM November 19, 1996

Task name: OPTIMA

Sample Weight: 1.0000 Solution Volume: 1.00

On-Peak Integrations: 3 Off-Peak Integrations: 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.001	0.001	0.021	0.015	0.016	-0.007	0.001	0.001
S.D.	0.002	0.000	0.008	0.003	0.009	0.002	0.000	0.001
% R.S.D.	114.379	18.827	38.143	20.079	55.545	30.500	28.339	97.280

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.023	0.169	-0.000	0.016	0.013	0.001	-0.002	0.076
S.D.	0.000	0.002	0.003	0.002	0.002	0.002	0.002	0.087
% R.S.D.	0.491	1.337	764.450	13.153	17.951	284.786	103.689	114.308

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.011	0.016	0.000	-0.003	0.009	0.007	-0.009	1.710
S.D.	0.024	0.016	0.000	0.004	0.004	0.002	0.003	0.001
% R.S.D.	212.341	99.305	110.985	120.798	49.210	29.953	35.044	0.086

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.002	0.016	0.000	-0.006	0.001	0.002	-0.004	290.007
S.D.	0.001	0.007	0.001	0.009	0.001	0.000	0.001	0.616
% R.S.D.	44.840	41.274	722.847	148.676	63.106	19.234	38.123	0.212

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.001	0.001	-0.002	-0.000	0.032
S.D.	0.000	0.028	0.001	0.000	0.046
% R.S.D.	24.682	4011.701	67.905	194.912	143.763

~~WHC~~
HNC
WHC SD-WM-DP-201, REV. 1

Identity 1: s96t005121_L Identity 2: .25ml-9.75ml-2ml-8ml 10:42 AM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 200.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.579	0.110	-1.784	2.108	165.660	0.805	0.221	0.167
S.D.	0.259	0.009	1.575	0.181	0.761	0.406	0.038	0.016
% R.S.D.	44.668	7.873	88.270	8.572	0.459	50.417	17.188	9.696

	Zn (ppm)	Mi (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.291	5.705	0.592	4.280	2.654	0.740	-3.841	6.176
S.D.	0.115	0.338	0.527	0.347	0.029	0.121	0.600	3.445
% R.S.D.	2.164	5.922	89.060	8.118	1.079	16.351	15.633	55.784

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	4.660	2.856	0.068	107.068	2.924	0.266	0.423	360.663
S.D.	0.859	0.884	0.036	1.034	0.578	0.000	0.402	1.640
% R.S.D.	18.443	30.961	53.306	0.966	19.758	0.008	95.030	0.455

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.156	-2.779	-0.218	-2.082	0.353	0.171	0.395	13708.725
S.D.	0.042	0.728	0.070	1.636	0.117	0.144	0.180	49.781
% R.S.D.	26.649	26.204	31.895	78.579	33.113	84.386	45.626	0.363

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.299	-5.010	0.319	0.084	11.840
S.D.	0.099	2.042	0.288	0.049	3.142
% R.S.D.	33.157	40.763	90.186	59.101	26.541

~~HNF~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: s96t005121 Identity 2: .25ml-9.75ml

10:45 AM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 40.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.161	0.062	-0.006	2.101	165.644	-0.134	0.057	0.031
S.D.	0.019	0.002	0.220	0.059	0.961	0.001	0.005	0.007
% R.S.D.	12.080	2.794	3762.950	2.802	0.580	0.559	9.663	21.743

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.264	4.671	-0.148	4.585	0.557	0.960	-0.272	6.423
S.D.	0.002	0.074	0.051	0.140	0.002	0.104	0.129	0.884
% R.S.D.	0.908	1.574	34.186	3.057	0.297	10.859	47.335	13.769

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.883	1.913	0.029	102.898	1.513	0.098	-0.129	354.338
S.D.	0.198	0.142	0.001	2.352	0.072	0.005	0.199	3.735
% R.S.D.	22.462	7.405	4.616	2.286	4.789	4.948	154.754	1.054

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.024	1.441	0.047	0.817	0.169	0.053	-0.018	13153.453
S.D.	0.031	0.497	0.007	0.270	0.005	0.040	0.029	93.634
% R.S.D.	130.572	34.472	14.894	33.073	3.192	75.676	162.595	0.712

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.193	0.176	0.075	-0.015	-0.014
S.D.	0.013	0.416	0.025	0.006	0.180
% R.S.D.	6.677	236.344	33.596	38.075	1259.104

~~HNF~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: s96t005121_d Identity 2: .25ml-9.75ml

10:48 AM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 40.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.067	0.066	0.085	2.098	165.521	-0.037	0.089	0.041
S.D.	0.022	0.000	0.036	0.044	0.184	0.081	0.003	0.008
% R.S.D.	31.900	0.000	42.801	2.085	0.111	221.478	2.829	20.014

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	1.183	11.690	-0.064	4.253	0.512	0.889	0.163	5.632
S.D.	0.023	0.056	0.030	0.016	0.004	0.060	0.197	1.092
% R.S.D.	1.914	0.476	46.010	0.369	0.855	6.775	120.322	19.395

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	1.148	0.410	0.035	107.451	0.874	0.078	0.196	368.145
S.D.	0.202	0.068	0.002	0.717	0.142	0.008	0.026	1.545
% R.S.D.	17.583	16.631	4.385	0.668	16.229	10.721	13.456	0.420

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.034	0.297	0.065	0.263	0.081	0.037	-0.062	13431.060
S.D.	0.057	0.443	0.017	0.396	0.009	0.007	0.026	30.619
% R.S.D.	170.236	149.220	26.606	150.857	10.928	17.666	42.311	0.228

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.180	-0.723	0.019	0.001	2.553
S.D.	0.013	1.251	0.030	0.006	0.628
% R.S.D.	7.150	173.050	162.223	547.607	24.579

~~HNE~~
WHO-SD-WM-DP-201, REV. 1

Identity 1: s96t005121_b Identity 2: .25ml-2ml-7.75ml

10:52 AM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 40.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	40.237	40.218	41.363	39.847	204.446	39.211	41.955	39.429
S.D.	0.107	0.123	0.722	0.020	0.460	0.215	0.032	0.047
% R.S.D.	0.266	0.306	1.746	0.051	0.225	0.549	0.076	0.119

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Md (ppm)	U (ppm)
Mean	39.961	43.498	40.828	44.156	40.063	40.156	42.170	84.570
S.D.	0.172	0.094	0.202	0.170	0.033	0.191	0.138	0.197
% R.S.D.	0.431	0.216	0.494	0.385	0.082	0.477	0.327	0.233

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	38.530	40.921	40.714	140.334	40.138	38.490	39.902	398.130
S.D.	0.216	0.148	0.101	0.606	0.472	0.114	0.494	0.926
% R.S.D.	0.561	0.363	0.248	0.432	1.176	0.297	1.238	0.233

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	39.303	38.297	8.845	38.930	39.003	39.040	39.520	13499.164
S.D.	0.158	0.234	0.119	0.603	0.127	0.063	0.174	24.206
% R.S.D.	0.402	0.611	1.346	1.548	0.326	0.162	0.440	0.179

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	39.382	38.476	40.304	40.277	37.652
S.D.	0.078	0.605	0.067	0.055	0.358
% R.S.D.	0.198	1.573	0.166	0.137	0.950

HNF
WHC-SD-WM-DP-201 REV. 1

Identity 1: s96t005121_x 10ppm Identity 2: 23ml-ml-ml-7.75ml 10:58 AM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 40.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	396.069	395.437	415.920	393.538	583.295	-0.630	0.090	379.608
S.D.	0.854	1.107	0.653	1.066	1.731	0.084	0.007	2.031
% R.S.D.	0.216	0.280	0.157	0.271	0.297	13.275	8.010	0.535

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	2.349	402.341	405.237	406.799	400.928	408.922	403.709	-0.158
S.D.	0.020	1.250	0.405	1.398	0.339	1.334	1.251	0.866
% R.S.D.	0.845	0.311	0.100	0.344	0.085	0.326	0.310	549.343

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	396.453	392.441	399.411	504.605	397.210	399.098	408.654	732.123
S.D.	1.756	0.147	0.796	2.765	2.412	1.470	2.584	4.534
% R.S.D.	0.443	0.038	0.199	0.548	0.607	0.368	0.632	0.619

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	389.185	379.918	95.292	396.230	356.739	400.916	386.823	13563.340
S.D.	1.098	1.140	0.440	0.391	1.083	1.040	0.636	67.138
% R.S.D.	0.282	0.300	0.462	0.099	0.304	0.259	0.164	0.495

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	402.085	390.926	3.039	401.855	377.019
S.D.	1.463	1.991	0.017	0.738	1.093
% R.S.D.	0.364	0.509	0.551	0.184	0.290

WHC SD-WM-DP-201, REV. 1

HNF

Identity 1: CCV Identity 2: Quality Control 12:32 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	5.036	5.083	5.244	4.748	4.966	4.954	5.227	5.230
S.D.	0.003	0.002	0.001	0.006	0.015	0.013	0.018	0.042
% R.S.D.	0.050	0.033	0.018	0.129	0.296	0.269	0.335	0.796

	Zn (ppm)	Mi (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.045	4.883	5.085	4.978	5.017	4.908	5.263	10.174
S.D.	0.009	0.014	0.008	0.003	0.012	0.011	0.012	0.010
% R.S.D.	0.175	0.284	0.165	0.054	0.233	0.232	0.236	0.100

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.000	5.153	5.145	5.139	4.993	4.887	5.073	5.100
S.D.	0.019	0.016	0.005	0.020	0.004	0.012	0.013	0.041
% R.S.D.	0.383	0.309	0.101	0.397	0.071	0.252	0.258	0.801

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	4.980	4.819	4.905	4.805	4.867	4.943	5.099	5.369
S.D.	0.008	0.047	0.003	0.024	0.003	0.007	0.013	0.057
% R.S.D.	0.168	0.969	0.061	0.490	0.056	0.150	0.262	1.063

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	4.892	4.848	5.056	5.170	4.704
S.D.	0.003	0.015	0.003	0.007	0.015
% R.S.D.	0.071	0.304	0.062	0.134	0.319

WHC-SD-WM-DP-201, REV. 1

HNF

12:36 PM November 19, 1996

Identity 1: CCB Identity 2: Quality Control

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.003	0.000	0.015	0.008	0.005	-0.009	0.001	0.001
S.D.	0.001	0.000	0.009	0.003	0.001	0.000	0.001	0.000
% R.S.D.	35.620	26.957	61.386	38.155	22.843	0.095	84.188	39.862

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	-0.000	0.006	0.003	-0.003	0.000	0.002	-0.014	0.083
S.D.	0.000	0.002	0.003	0.003	0.000	0.000	0.005	0.036
% R.S.D.	66.343	29.949	93.454	118.061	9.623	25.926	34.525	43.202

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.003	0.025	0.000	0.029	0.004	0.000	0.007	0.001
S.D.	0.015	0.006	0.000	0.006	0.005	0.000	0.001	0.006
% R.S.D.	558.641	22.776	98.382	19.569	134.996	0.014	18.201	693.501

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.001	-0.016	0.003	0.019	0.001	0.001	0.000	-0.115
S.D.	0.002	0.012	0.001	0.007	0.001	0.000	0.001	0.017
% R.S.D.	109.392	72.608	22.124	36.470	58.295	34.550	120.145	14.873

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.000	0.014	-0.000	0.000	0.073
S.D.	0.000	0.016	0.001	0.000	0.012
% R.S.D.	102.897	112.958	286.056	55.084	16.824

WHC-SD-WM-DP-201, REV. 1

HNF

12:40 PM November 19, 1996

Identity 1: S96T005139 Identity 2: .25ml-9.75ml

Task name: OPTIMA

Sample Weight: 1.0000 Solution Volume: 40.00

On-Peak Integrations: 3 Off-Peak Integrations: 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Sj (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.134	0.065	0.085	0.877	76.952	0.155	0.212	0.065
S.D.	0.075	0.008	0.256	0.094	0.263	0.141	0.018	0.022
% R.S.D.	55.783	11.615	301.340	10.773	0.341	91.379	8.578	33.365

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.571	4.438	-0.137	0.688	1.002	0.591	0.260	-4.377
S.D.	0.010	0.061	0.029	0.083	0.002	0.118	0.143	3.262
% R.S.D.	1.700	1.375	21.339	12.082	0.165	20.047	55.067	74.536

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	2.025	-0.623	0.044	116.904	9.972	0.064	0.317	421.539
S.D.	0.832	0.510	0.014	2.148	0.057	0.005	0.169	1.237
% R.S.D.	41.085	81.866	31.295	1.837	0.576	7.531	53.307	0.293

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.038	-2.083	0.080	0.792	0.005	0.004	0.024	11015.216
S.D.	0.026	0.239	0.035	0.530	0.017	0.029	0.012	42.045
% R.S.D.	67.558	11.460	43.627	66.918	320.096	818.724	48.918	0.382

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.107	0.330	0.104	0.006	4.354
S.D.	0.008	0.811	0.035	0.010	0.749
% R.S.D.	7.274	246.022	33.710	177.840	17.212

HNF
WHC-SD-WM-DP-201, REV. 1

Identity 1: S96T005139_d Identity 2: .25ml-9.75ml

12:48 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 40.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.159	0.049	0.691	1.465	76.462	-0.400	0.108	0.007
S.D.	0.032	0.005	0.103	0.078	0.332	0.141	0.017	0.009
% R.S.D.	20.449	9.352	14.977	5.305	0.434	35.139	15.358	115.567

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.484	4.593	0.053	0.391	0.945	0.490	-0.264	6.598
S.D.	0.009	0.040	0.051	0.066	0.002	0.006	0.350	1.077
% R.S.D.	1.899	0.877	95.410	16.957	0.175	1.215	132.921	16.326

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.028	0.870	0.012	122.544	9.619	0.067	0.458	442.523
S.D.	0.454	0.227	0.007	1.041	0.084	0.005	0.175	1.007
% R.S.D.	1611.823	26.097	61.205	0.849	0.874	7.220	38.269	0.227

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.012	1.313	0.001	-0.319	0.104	0.050	-0.096	11371.804
S.D.	0.040	0.225	0.024	0.172	0.012	0.024	0.046	27.176
% R.S.D.	330.033	17.142	2769.511	54.045	11.814	47.927	47.485	0.239

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.098	-0.509	-0.054	-0.019	2.999
S.D.	0.007	0.885	0.017	0.006	0.597
% R.S.D.	7.658	173.927	30.785	30.741	19.902

WHC-SD-WM-DP-201, REV. 1

HNF

12:51 PM November 19, 1996

Identity 1: S96T005140 Identity 2: .25ml-9.75ml

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 40.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.001	0.048	1.033	1.865	6.287	0.003	0.033	0.016
S.D.	0.089	0.005	0.500	0.129	0.250	0.081	0.015	0.010
% R.S.D.	8366.615	10.825	48.443	6.906	3.969	2469.797	46.801	64.367

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Md (ppm)	U (ppm)
Mean	0.223	6.080	-0.099	0.337	1.085	0.518	-0.341	4.373
S.D.	0.005	0.034	0.102	0.064	0.008	0.050	0.354	2.306
% R.S.D.	2.051	0.552	102.649	18.924	0.762	9.623	103.724	52.724

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.089	-0.381	0.007	23.660	169.573	0.042	-0.194	594.440
S.D.	0.716	0.468	0.009	0.332	0.655	0.005	0.119	1.217
% R.S.D.	806.022	122.914	133.204	1.402	0.387	11.547	61.112	0.205

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.014	0.264	0.003	0.009	0.029	-0.034	0.042	11723.783
S.D.	0.025	0.554	0.029	0.614	0.011	0.024	0.026	29.114
% R.S.D.	175.383	210.162	995.977	6552.118	37.441	69.599	62.253	0.248

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.042	-0.695	-0.104	-0.012	2.802
S.D.	0.008	0.081	0.067	0.010	1.265
% R.S.D.	18.631	11.686	63.820	83.373	45.160

~~WHC~~
HNF
WHC-SD-WM-DP-201, REV. 1

Identity 1: S96T005140.D Identity 2: .25ml-9.75ml

12:54 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 40.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.003	0.073	1.136	1.698	5.658	0.226	0.107	0.062
S.D.	0.020	0.003	0.504	0.018	0.090	0.081	0.019	0.002
% R.S.D.	612.900	4.745	44.337	1.069	1.590	35.878	17.436	3.040

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ce (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.871	2.026	-0.051	0.307	0.533	0.644	-0.079	-0.027
S.D.	0.007	0.058	0.050	0.068	0.002	0.019	0.338	0.334
% R.S.D.	0.778	2.881	99.641	22.211	0.310	2.918	424.925	1254.795

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	2.108	-0.933	0.041	18.042	165.550	0.050	0.095	550.909
S.D.	0.144	0.089	0.003	0.312	0.936	0.005	0.066	0.935
% R.S.D.	6.813	9.564	6.644	1.727	0.565	9.618	69.600	0.170

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.029	-1.955	0.053	0.043	0.010	0.046	0.053	10698.748
S.D.	0.041	0.480	0.014	0.025	0.003	0.029	0.022	23.352
% R.S.D.	142.047	24.577	26.130	56.999	30.055	63.087	42.538	0.218

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.056	-0.886	0.125	0.003	3.080
S.D.	0.015	0.417	0.029	0.006	0.420
% R.S.D.	26.846	47.097	23.176	176.454	13.625

WHC-SD-WM-DP-201, REV. 1

HNF

Identity 1: ICSA

Identity 2: Quality Control

12:59 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.003	0.003	-0.030	0.006	200.388	-0.007	0.001	0.001
S.D.	0.001	0.000	0.017	0.003	0.536	0.002	0.000	0.000
% R.S.D.	36.559	4.204	55.848	52.973	0.267	27.635	34.412	31.731

	Zn (ppm)	Mi (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Ni (ppm)	U (ppm)
Mean	0.005	0.010	0.004	94.815	102.110	0.001	-0.033	0.043
S.D.	0.000	0.002	0.001	0.018	0.130	0.002	0.005	0.050
% R.S.D.	6.501	18.026	39.863	0.019	0.127	230.642	15.129	115.743

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.029	0.113	0.002	0.043	-0.002	90.868	0.094	192.602
S.D.	0.009	0.008	0.000	0.017	0.005	0.301	0.009	0.698
% R.S.D.	30.371	6.883	9.890	38.091	226.938	0.332	9.554	0.363

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.002	0.039	0.002	0.002	0.001	0.002	0.009	0.023
S.D.	0.001	0.015	0.001	0.007	0.000	0.001	0.000	0.019
% R.S.D.	30.551	39.358	28.123	390.658	33.895	40.268	2.656	81.076

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.000	0.003	0.002	0.003	0.046
S.D.	0.000	0.017	0.000	0.000	0.025
% R.S.D.	60.348	624.653	15.575	8.989	54.873

WHC-SD-WM-DP-201, REV. 1

HNF

Identity 1: ICSAB Identity 2: Quality Control

1:02 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.000	0.003	-0.029	0.007	198.823	0.471	0.510	0.974
S.D.	0.001	0.000	0.014	0.001	0.764	0.007	0.001	0.004
% R.S.D.	153.805	0.000	49.837	10.898	0.384	1.565	0.101	0.421

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.956	0.946	0.004	94.686	101.246	0.468	-0.024	0.001
S.D.	0.003	0.007	0.001	0.059	0.293	0.006	0.008	0.018
% R.S.D.	0.359	0.707	33.410	0.062	0.289	1.361	30.847	2694.779

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.002	0.098	0.511	0.027	0.008	88.941	0.088	192.305
S.D.	0.011	0.002	0.001	0.004	0.009	0.620	0.010	0.326
% R.S.D.	563.015	1.543	0.211	14.171	123.801	0.697	10.854	0.170

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.006	0.060	1.000	0.937	0.001	0.951	0.008	-0.017
S.D.	0.001	0.018	0.002	0.010	0.000	0.003	0.001	0.014
% R.S.D.	12.657	30.096	0.223	1.067	0.819	0.301	15.253	83.609

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.477	-0.029	0.487	0.495	0.040
S.D.	0.000	0.027	0.002	0.001	0.011
% R.S.D.	0.101	95.993	0.482	0.199	27.414

WHC SD-WM-DP-201, REV. 1

HNF

Identity 1: CCV

Identity 2: Quality Control

1:06 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	4.940	4.899	5.039	4.539	4.826	4.726	5.138	5.043
S.D.	0.016	0.024	0.031	0.030	0.029	0.034	0.011	0.023
% R.S.D.	0.323	0.495	0.610	0.659	0.593	0.714	0.220	0.454

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Md (ppm)	U (ppm)
Mean	4.844	4.717	4.989	4.952	4.927	4.741	5.341	9.890
S.D.	0.029	0.032	0.011	0.018	0.013	0.024	0.012	0.046
% R.S.D.	0.601	0.685	0.229	0.369	0.257	0.503	0.227	0.463

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	4.782	5.076	4.982	4.808	4.683	4.668	4.863	4.928
S.D.	0.046	0.012	0.021	0.022	0.041	0.029	0.015	0.022
% R.S.D.	0.957	0.240	0.416	0.461	0.885	0.618	0.317	0.442

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	4.709	4.593	4.806	4.730	4.645	4.780	5.032	5.370
S.D.	0.043	0.048	0.022	0.027	0.024	0.023	0.015	0.021
% R.S.D.	0.913	1.049	0.457	0.574	0.518	0.472	0.288	0.399

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	4.795	4.735	4.924	5.126	4.672
S.D.	0.018	0.017	0.020	0.013	0.030
% R.S.D.	0.372	0.362	0.401	0.256	0.641

~~HNE~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: CCB Identity 2: Quality Control 1:09 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.001	0.001	-0.001	0.001	0.014	0.002	0.003	0.002
S.D.	0.002	0.000	0.012	0.002	0.005	0.002	0.000	0.000
% R.S.D.	142.665	15.802	2080.636	248.749	37.084	86.449	18.750	24.033

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.000	0.003	-0.004	-0.001	-0.001	0.002	0.018	0.025
S.D.	0.000	0.002	0.002	0.001	0.000	0.002	0.006	0.043
% R.S.D.	47.149	72.609	58.410	97.710	12.802	132.670	34.290	169.169

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.082	0.014	0.001	0.006	0.006	0.001	0.003	0.031
S.D.	0.014	0.011	0.000	0.002	0.004	0.000	0.003	0.006
% R.S.D.	17.448	75.767	14.003	24.649	63.701	12.374	96.447	18.724

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.002	-0.002	0.002	0.001	0.001	0.002	0.003	0.157
S.D.	0.001	0.007	0.001	0.006	0.000	0.001	0.001	0.007
% R.S.D.	25.456	358.901	42.506	614.784	35.796	58.542	20.667	4.316

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.001	-0.007	0.003	0.000	0.080
S.D.	0.000	0.008	0.002	0.000	0.017
% R.S.D.	49.424	128.032	59.818	173.059	20.995

10/14/96 10:27
A-0004-1

FILE No: 961119B.DAT
HNE
WHC-SD-WM-DP-201, REV. 1

Page: 1

LABCORE Data Entry Template for Worklist# 13964

Analyst: J. WORRELL Instrument: ICP01 Book# 528 488

Method: LA-505-151/161 Rev/Mod D-3
9/11/96

Worklist Comment: ICP B-109 (FUSION)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	LLS		@ICP-QC	QC		
4	ICSA		@ICP-QC	QC		
5	ICSAB		@ICP-QC	QC		
6	PREPBLKTJA		@ICP-F01	SOLID		
7	SERDIL	S96T005141	0 F	@ICP-F01	SOLID	
8	SAMPLE	S96T005141	0 F	@ICP-F01	SOLID	96001238 B-109
Analytes Requested: AG-F-01, AL-F-01, AS-F-01, B-F-01, BA-F-01, BE-F-01, BI-F-01, CA-F-01, CD-F-01, CE-F-01, CO-F-01, CR-F-01, CU-F-01, FE-F-01, K-F-01, LA-F-01, LI-F-01, MG-F-01, MN-F-01, MO-F-01, NA-F-01, ND-F-01, NI-F-01, P-F-01, PB-F-01, S-F-01, SB-F-01, SE-F-01, SI-F-01, SM-F-01, SR-F-01, TI-F-01, TL-F-01, U-F-01, V-F-01, ZN-F-01, ZR-F-01						

9 DUP S96T005141 0 F @ICP-F01 SOLID

10 SPK S96T005141 0 F @ICP-F01 SOLID

105 1000PM P. SPK

11 CCV 9/11-18-96 @ICP-QC QC

12 CCB @ICP-QC QC

13 SERDIL S96T005142 0 F @ICP-F01 SOLID

14 SAMPLE S96T005142 0 F @ICP-F01 SOLID 96001238 B-109
Analytes Requested: AG-F-01, AL-F-01, AS-F-01, B-F-01, BA-F-01, BE-F-01, BI-F-01, CA-F-01, CD-F-01, CE-F-01, CO-F-01, CR-F-01, CU-F-01, FE-F-01, K-F-01, LA-F-01, LI-F-01,

Data Entry Comments: Sample result calculation:

$$S96T005141 \text{ Al} = 7.738 \text{ ug} \times \frac{1}{2.92 \times 1.976 \frac{g}{L} \times \frac{1L}{1000 \mu L}} = 3.92 \text{ e} + 3 \text{ ug}$$

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Note: $1.976 \frac{g}{L}$ is sample prep dilution factor

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10/14/96 10:27
A-0004-1

Page: 2

LABCORE Data Entry Template for Worklist# 13964

S Type	Sample#	R A	Test	Matrix	Group#	Project
			MG-F-01	MN-F-01	MO-F-01	NA-F-01
			ND-F-01	NI-F-01	P-F-01	PB-F-01
			S-F-01	SB-F-01	SE-F-01	SI-F-01
			SM-F-01	SR-F-01	TI-F-01	TL-F-01
			U-F-01	V-F-01	ZN-F-01	ZR-F-01

15 DUP S96T005142 0 F @ICP-F01 SOLID

16 SPK S96T005142 0 F @ICP-F01 SOLID

17 SAMPLE S96T005125 0 F @ICP-F01 SOLID 96001238 B-109

Analytes Requested: AG-F-01, AL-F-01, AS-F-01, B-F-01, BA-F-01, BE-F-01, BI-F-01, CA-F-01, CD-F-01, CE-F-01, CO-F-01, CR-F-01, CU-F-01, FE-F-01, K-F-01, LA-F-01, LI-F-01, MG-F-01, MN-F-01, MO-F-01, NA-F-01, ND-F-01, NI-F-01, P-F-01, PB-F-01, S-F-01, SB-F-01, SE-F-01, SI-F-01, SM-F-01, SR-F-01, TI-F-01, TL-F-01, U-F-01, V-F-01, ZN-F-01, ZR-F-01

18 DUP S96T005125 0 F @ICP-F01 SOLID

19 ICSA @ICP-QC QC

20 ICSAB @ICP-QC QC

21 CCV @ICP-QC QC

22 CCB @ICP-QC QC

Final page for worklist # 13964

Analyst Signature: *J. W. Warrall* Date: 11-17-96
 PROPBLKARL .50 - 9.50 180
 S96T005141 DIL SX .50 - 9.50 - 2 - 8 20
 SAM .50 - 9.50 20
 DUP .50 - 9.50 20
 PSPK .50 - 2 - 7.50 20
 10PPM .50 - 1 - 1 - 7.50 20

Reviewed by: *Shirley M. Parnell* 11/21/96
 Analyst Signature: *Shirley M. Parnell* Date: 11/21/96
 S96T005142 DIL SX .50 - 9.5 - 2 - 8 100
 SAM .50 - 9.5 20
 DUP .50 - 9.5 20
 PSPK .50 - 2 - 7.5 20
 10PPM SX .50 - 1 - 1 - 7.5 20
 S96T005125 SAM .50 - 9.5 20
 DUP .50 - 9.5 20

Data Entry Comments: *Sp. the recovery calculation:*

$$S96T005141 \text{ Al} = \left(\frac{20}{20} \right) - \left(\frac{7.738}{20} \right) \times 100 = 100.2\%$$

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Note: *Sp. the true value is 1.0 ppm for all elements except for U = 2.0 ppm*

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HNF
WHO-SD-WM-DP-201, REV. 1

Identity 1: ICV Identity 2: Quality Control 1:40 PM November 19, 1996
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	5.012	5.023	5.150	4.681	4.898	4.905	5.126	4.988
S.D.	0.010	0.013	0.013	0.006	0.012	0.002	0.017	0.027
% R.S.D.	0.204	0.255	0.247	0.136	0.255	0.042	0.331	0.540
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	4.986	4.847	5.028	4.974	4.949	4.871	5.241	10.102
S.D.	0.005	0.004	0.009	0.002	0.013	0.009	0.005	0.019
% R.S.D.	0.091	0.075	0.176	0.042	0.256	0.192	0.092	0.188
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	4.971	5.072	5.068	5.015	4.907	4.856	5.005	4.879
S.D.	0.021	0.016	0.015	0.019	0.031	0.002	0.023	0.018
% R.S.D.	0.431	0.311	0.295	0.381	0.628	0.035	0.466	0.367
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	4.922	4.759	4.867	4.801	4.788	4.896	5.039	5.207
S.D.	0.007	0.024	0.008	0.018	0.010	0.005	0.020	0.028
% R.S.D.	0.144	0.496	0.169	0.378	0.217	0.100	0.400	0.540
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	4.871	4.852	5.023	5.132	4.659			
S.D.	0.003	0.020	0.008	0.013	0.019			
% R.S.D.	0.064	0.420	0.168	0.252	0.411			

J. Wardell
11-19-96

FILE NO: 9611198.DAT

5967005141, 5142 & 5125

B-109 FUSION

WORKLIST No.: 13964

**SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION ANALYSIS ON PAGES 124 TO 154.**

~~HNE~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: ICB Identity 2: Quality Control 1:43 PM November 19, 1996
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.000	0.000	-0.002	-0.001	-0.005	-0.005	0.001	0.000
S.D.	0.001	0.000	0.011	0.002	0.008	0.002	0.001	0.000
% R.S.D.	27453.185	45.827	498.708	167.807	157.821	43.351	95.119	53.933

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.000	0.007	-0.002	-0.001	-0.002	-0.001	0.001	-0.023
S.D.	0.000	0.001	0.001	0.002	0.000	0.001	0.005	0.047
% R.S.D.	63.047	19.802	34.766	312.268	3.261	105.014	477.205	205.338

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.010	0.025	0.000	0.012	0.010	0.000	0.013	0.006
S.D.	0.014	0.010	0.000	0.001	0.002	0.000	0.006	0.006
% R.S.D.	131.556	37.831	216.983	5.057	21.969	57.780	47.721	98.975

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.000	-0.017	-0.000	0.008	0.001	0.001	0.004	0.129
S.D.	0.000	0.012	0.001	0.014	0.001	0.000	0.001	0.019
% R.S.D.	457.303	67.672	1295.086	165.622	73.714	37.673	33.495	14.696

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.000	0.018	0.001	-0.000	0.001
S.D.	0.000	0.006	0.001	0.000	0.022
% R.S.D.	44.077	32.240	136.192	3375.970	2251.832

~~HNF~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: LLS Identity 2: Quality Control 1:46 PM November 19, 1996
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 1.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.021	0.021	0.194	0.184	0.104	0.039	0.021	0.020
S.D.	0.000	0.000	0.005	0.001	0.002	0.002	0.000	0.000
% R.S.D.	0.628	0.357	2.705	0.594	2.348	5.254	0.878	1.458

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.021	0.048	0.106	0.096	0.213	0.022	0.206	0.441
S.D.	0.000	0.002	0.001	0.002	0.000	0.003	0.005	0.026
% R.S.D.	2.152	4.079	1.188	2.415	0.121	12.691	2.572	5.838

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.205	0.233	0.102	0.436	0.199	0.209	0.199	0.201
S.D.	0.016	0.004	0.000	0.037	0.004	0.001	0.005	0.004
% R.S.D.	7.755	1.850	0.195	8.390	1.815	0.556	2.568	2.202

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.101	0.168	0.020	0.200	0.021	0.011	0.106	0.638
S.D.	0.001	0.016	0.000	0.015	0.000	0.001	0.001	0.015
% R.S.D.	0.618	9.654	1.529	7.730	1.264	5.340	1.046	2.331

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.020	0.077	0.104	0.010	0.385
S.D.	0.000	0.016	0.001	0.000	0.025
% R.S.D.	2.537	20.751	1.041	0.047	6.408

HNF
~~WHG~~ SD-WM-DP-201, REV. 1

Identity 1: ICSA Identity 2: Quality Control 1:49 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bf (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.004	0.003	-0.027	0.008	194.716	-0.008	0.001	0.002
S.D.	0.002	0.000	0.009	0.003	1.551	0.003	0.001	0.000
% R.S.D.	38.566	6.963	32.779	38.438	0.796	37.212	45.668	22.940
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.006	0.008	0.002	94.582	100.463	-0.003	-0.015	0.083
S.D.	0.000	0.000	0.002	0.178	0.517	0.002	0.001	0.069
% R.S.D.	5.817	5.688	86.191	0.188	0.514	52.631	8.564	82.844
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.050	0.107	0.002	0.015	0.011	90.336	0.107	178.902
S.D.	0.024	0.013	0.000	0.010	0.016	0.540	0.011	1.472
% R.S.D.	48.120	12.496	16.479	70.844	142.257	0.598	9.992	0.823
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.000	0.057	0.003	0.000	0.002	0.003	0.012	0.013
S.D.	0.001	0.023	0.001	0.010	0.001	0.001	0.001	0.023
% R.S.D.	749.541	40.191	45.405	2251.685	53.744	19.515	4.370	171.259
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	0.001	-0.031	0.001	0.003	0.105			
S.D.	0.000	0.035	0.002	0.000	0.037			
% R.S.D.	44.325	110.569	168.893	9.950	35.680			

~~WNC~~ SD-WM-DP-201, REV. 1

Identity 1: ICSAB Identity 2: Quality Control 1:53 PM November 19, 1996
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 1.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.002	0.003	-0.009	0.005	191.572	0.450	0.487	0.895
S.D.	0.002	0.000	0.005	0.002	0.746	0.004	0.000	0.003
% R.S.D.	91.974	1.533	52.060	34.319	0.389	0.784	0.080	0.285
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.938	0.926	0.004	94.191	99.103	0.460	-0.032	0.014
S.D.	0.002	0.004	0.001	0.192	0.246	0.003	0.013	0.030
% R.S.D.	0.218	0.472	32.726	0.204	0.248	0.736	40.848	208.322
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.028	0.094	0.490	0.029	-0.002	87.382	0.117	177.529
S.D.	0.014	0.006	0.001	0.008	0.007	0.607	0.006	0.483
% R.S.D.	51.887	6.242	0.194	28.325	399.449	0.695	5.263	0.272
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.002	0.107	0.979	0.911	0.001	0.930	0.012	-0.022
S.D.	0.000	0.015	0.003	0.020	0.000	0.003	0.000	0.014
% R.S.D.	19.501	13.760	0.309	2.246	20.789	0.374	4.143	64.401
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	0.472	0.007	0.481	0.487	0.081			
S.D.	0.002	0.010	0.002	0.001	0.017			
% R.S.D.	0.394	130.453	0.402	0.136	20.996			

~~HNF~~
WHG-SD-WM-DP-201, REV. 1

Identity 1: prepbikarl Identity 2: .50ml-9.5ml 1:56 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.003	0.002	0.002	0.019	0.006	-0.007	0.002	0.001
S.D.	0.002	0.000	0.011	0.003	0.004	0.002	0.001	0.000
% R.S.D.	73.725	5.207	472.143	15.312	59.683	27.263	40.019	43.313

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.016	0.374	0.002	0.006	0.011	0.002	-0.006	-0.030
S.D.	0.000	0.003	0.002	0.001	0.002	0.000	0.009	0.050
% R.S.D.	2.134	0.824	93.369	11.682	19.295	14.170	151.716	164.347

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.017	0.008	0.001	0.029	0.012	0.004	0.007	3.204
S.D.	0.010	0.010	0.000	0.007	0.003	0.002	0.009	0.017
% R.S.D.	62.753	121.906	34.433	25.089	22.368	47.253	117.732	0.518

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.001	-0.000	0.001	0.009	0.001	0.000	-0.002	532.110
S.D.	0.001	0.005	0.001	0.011	0.001	0.001	0.000	1.705
% R.S.D.	269.411	1966.530	44.237	133.918	105.224	407.485	6.652	0.320

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.003	0.021	-0.001	-0.000	0.027
S.D.	0.000	0.031	0.000	0.000	0.024
% R.S.D.	6.032	146.850	40.173	52.722	88.756

HNF
WHG-SD-WM-DP-201, REV. 1

Identity 1: s96t005141_L Identity 2: .50ml-9.5ml-2ml-8ml 2:01 PM November 19, 1996
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 100.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.031	0.157	15.478	2.170	9.249	-0.153	0.369	0.157
S.D.	0.182	0.015	0.282	0.373	0.906	0.001	0.050	0.029
% R.S.D.	588.584	9.524	1.825	17.196	9.795	0.573	13.574	18.653

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	2.838	9.967	0.001	28.357	1.131	7.023	0.876	-6.507
S.D.	0.010	0.218	0.128	0.834	0.011	0.168	0.140	4.998
% R.S.D.	0.363	2.186	14795.997	2.942	0.967	2.393	15.960	76.803

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	7.349	1.365	0.107	50.968	77.012	0.126	-0.074	443.388
S.D.	1.812	1.044	0.027	1.578	0.652	0.012	0.585	2.229
% R.S.D.	24.657	76.452	25.754	3.096	0.847	9.624	793.578	0.503

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.186	-0.217	0.132	3.925	-0.002	0.117	0.256	10408.373
S.D.	0.048	0.686	0.106	1.136	0.063	0.033	0.056	66.929
% R.S.D.	25.564	316.413	80.206	28.936	2518.886	28.485	21.676	0.643

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.172	3.077	0.368	0.023	7.954
S.D.	0.019	3.015	0.089	0.014	2.896
% R.S.D.	11.049	97.965	24.169	59.154	36.401

~~HNF~~
WHG-SD-WM-DP-201, REV. 1

Identity 1: s96t005141 Identity 2: .50ml-9.5ml 2:04 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 20.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.115	0.088	14.164	2.723	7.738	0.104	0.096	0.021
S.D.	0.019	0.002	0.170	0.045	0.095	0.000	0.005	0.001
% R.S.D.	16.179	2.604	1.200	1.665	1.228	0.359	5.393	4.561

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.813	10.423	0.056	27.934	0.334	6.967	-0.002	3.503
S.D.	0.010	0.058	0.051	0.149	0.002	0.055	0.092	0.964
% R.S.D.	1.276	0.556	90.233	0.534	0.656	0.790	4256.134	27.517

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.727	0.315	0.019	51.600	80.308	0.093	0.186	427.302
S.D.	0.347	0.179	0.003	0.932	0.432	0.002	0.099	2.066
% R.S.D.	47.727	56.707	17.765	1.806	0.538	2.624	53.124	0.484

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.070	0.232	-0.025	1.571	0.045	0.008	0.289	9807.102
S.D.	0.019	0.215	0.015	0.204	0.013	0.025	0.020	39.753
% R.S.D.	27.259	92.880	60.948	12.982	28.833	301.737	6.842	0.405

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.152	0.071	0.066	-0.003	1.072
S.D.	0.004	0.132	0.017	0.006	0.452
% R.S.D.	2.397	187.637	25.835	198.385	42.152

Identity 1: s96t005141_d Identity 2: .50ml-9.5ml 2:08 PM November 19, 1996
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 20.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.110	0.091	16.083	2.450	11.418	-0.011	0.076	0.002
S.D.	0.022	0.001	0.138	0.072	0.072	0.041	0.004	0.003
% R.S.D.	19.608	0.952	0.861	2.924	0.631	373.745	5.839	131.379

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.860	7.817	0.032	29.567	0.332	7.307	-0.190	5.146
S.D.	0.012	0.027	0.044	0.160	0.001	0.055	0.081	0.337
% R.S.D.	1.426	0.344	137.218	0.541	0.249	0.755	42.706	6.540

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.144	0.652	0.008	48.802	86.174	0.098	0.137	440.599
S.D.	0.066	0.040	0.002	0.187	0.210	0.000	0.104	3.546
% R.S.D.	45.633	6.065	30.908	0.383	0.244	0.001	76.290	0.805

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.009	0.610	-0.040	1.777	0.063	0.010	0.202	9950.228
S.D.	0.010	0.196	0.012	0.190	0.005	0.013	0.022	58.267
% R.S.D.	102.272	32.089	30.699	10.678	8.655	135.159	10.779	0.586

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.154	-0.487	-0.017	0.001	-0.124
S.D.	0.006	0.152	0.015	0.003	0.112
% R.S.D.	4.199	31.192	90.650	397.885	90.236

~~WFC~~
WFC-SD-WM-DF-201, REV. 1

Identity 1: s96t005141_a Identity 2: .50ml-2ml-7.5ml 2:12 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 20.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	20.390	20.191	35.629	21.878	27.777	20.017	20.537	18.197
S.D.	0.005	0.057	0.236	0.112	0.036	0.071	0.077	0.156
% R.S.D.	0.022	0.282	0.662	0.511	0.130	0.354	0.374	0.855

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	21.291	30.162	20.393	48.487	19.818	26.908	20.319	42.698
S.D.	0.050	0.050	0.091	0.395	0.048	0.162	0.112	0.915
% R.S.D.	0.233	0.166	0.448	0.815	0.242	0.603	0.551	2.144

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	20.368	20.539	20.112	74.197	101.768	19.693	20.051	475.351
S.D.	0.282	0.102	0.068	0.299	0.261	0.029	0.147	3.500
% R.S.D.	1.385	0.496	0.339	0.402	0.256	0.148	0.731	0.736

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	20.020	19.581	16.826	21.198	19.324	19.838	19.733	10329.524
S.D.	0.099	0.071	0.037	0.174	0.030	0.033	0.119	59.441
% R.S.D.	0.497	0.363	0.218	0.819	0.156	0.164	0.602	0.575

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	20.064	20.111	20.514	19.977	19.280
S.D.	0.049	0.597	0.036	0.040	0.684
% R.S.D.	0.246	2.970	0.177	0.200	3.549

~~WHC~~ SD-WM-DP-201, REV. 1

Identity 1: s96t005141_10ppm std Identity 2: .50ml-1ml-1ml-7.5ml

2:16 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 20.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	201.939	193.960	217.373	197.182	208.901	-0.257	0.099	174.357
S.D.	0.738	0.895	1.260	0.476	0.831	0.071	0.012	1.493
% R.S.D.	0.365	0.462	0.580	0.242	0.398	27.472	12.165	0.856
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	1.705	203.430	198.375	224.791	194.821	204.832	199.638	3.162
S.D.	0.006	0.504	0.560	0.690	0.944	0.071	1.181	1.041
% R.S.D.	0.344	0.248	0.282	0.307	0.484	0.034	0.592	32.921
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	194.109	190.771	194.366	251.244	276.271	194.115	197.960	612.081
S.D.	0.907	0.902	1.022	1.189	0.894	0.369	0.609	4.571
% R.S.D.	0.467	0.473	0.526	0.473	0.324	0.190	0.308	0.747
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	192.526	182.656	147.437	195.626	175.810	194.853	191.388	10061.147
S.D.	0.571	1.063	0.706	0.748	0.559	0.250	0.833	68.895
% R.S.D.	0.296	0.582	0.479	0.382	0.318	0.128	0.435	0.685
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	196.626	196.146	1.506	195.614	182.294			
S.D.	0.215	1.119	0.005	0.654	0.723			
% R.S.D.	0.109	0.570	0.306	0.334	0.397			

~~WHE~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: CGV Identity 2: Quality Control 3:41 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	5.063	5.031	5.174	4.708	4.878	4.958	5.110	4.861
S.D.	0.006	0.010	0.029	0.009	0.010	0.005	0.008	0.026
% R.S.D.	0.109	0.203	0.562	0.187	0.212	0.108	0.150	0.530

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.030	4.898	5.058	5.062	4.967	4.929	5.238	10.093
S.D.	0.006	0.006	0.015	0.030	0.003	0.014	0.019	0.007
% R.S.D.	0.121	0.128	0.294	0.601	0.070	0.277	0.359	0.074

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	4.916	5.087	5.061	5.040	4.877	4.912	5.043	4.769
S.D.	0.016	0.003	0.009	0.029	0.011	0.008	0.015	0.029
% R.S.D.	0.326	0.063	0.181	0.580	0.235	0.172	0.300	0.608

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	4.944	4.734	4.916	4.869	4.793	4.953	5.048	5.135
S.D.	0.016	0.009	0.003	0.013	0.009	0.008	0.008	0.024
% R.S.D.	0.320	0.183	0.051	0.266	0.184	0.170	0.157	0.467

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	4.947	4.833	5.077	5.166	4.683
S.D.	0.008	0.033	0.010	0.006	0.021
% R.S.D.	0.161	0.680	0.189	0.113	0.445

~~WHC~~SD-WM-DP-201, REV. 1

Identity 1: CCB Identity 2: Quality Control 3:46 PM November 19, 1996
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 1.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.003	0.001	0.009	0.006	0.008	0.002	0.003	0.002
S.D.	0.001	0.000	0.003	0.002	0.002	0.004	0.000	0.000
% R.S.D.	28.754	8.056	35.437	42.989	29.206	172.427	12.124	17.593

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.001	0.001	-0.001	0.003	-0.002	0.004	0.013	0.064
S.D.	0.000	0.003	0.001	0.001	0.000	0.001	0.003	0.047
% R.S.D.	11.784	351.938	178.624	48.948	7.613	36.798	26.786	72.438

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.092	0.014	0.002	0.021	0.014	0.000	0.005	0.025
S.D.	0.016	0.008	0.000	0.008	0.005	0.000	0.005	0.007
% R.S.D.	17.982	59.998	16.537	37.786	32.582	76.417	97.188	27.371

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.003	-0.023	0.002	-0.010	0.002	0.001	0.008	0.297
S.D.	0.001	0.011	0.001	0.009	0.000	0.000	0.001	0.007
% R.S.D.	39.969	45.525	65.009	89.007	16.335	30.452	9.906	2.289

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.001	-0.002	0.006	0.001	0.106
S.D.	0.000	0.011	0.001	0.000	0.034
% R.S.D.	21.194	456.563	16.956	23.947	31.970

HNF
WHC-SD-WM-DP-201, REV. 1

Identity 1: S96T005142_L Identity 2: .50ml-9.5ml-2ml-2ml
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 200.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

3:51 PM November 19, 1996

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at correct D.F.

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.995	0.310	60.767	20.437	46.836	0.011	0.270	0.092
S.D.	0.452	0.046	0.508	1.468	1.748	0.408	0.255	0.080
% R.S.D.	45.476	14.783	0.836	7.181	3.731	3646.731	94.404	87.166

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	6.836	26.427	0.776	19.704	2.840	4.650	-0.071	35.207
S.D.	0.067	0.203	0.262	0.385	0.014	0.844	1.705	21.386
% R.S.D.	0.983	0.769	33.774	1.952	0.504	18.139	2395.711	60.744

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	3.092	8.360	0.064	45.082	214.713	0.463	0.253	1043.900
S.D.	6.634	3.758	0.105	1.587	1.724	0.024	0.822	10.945
% R.S.D.	214.536	44.947	164.243	3.520	0.803	5.247	324.682	1.048

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.024	-1.982	-0.307	8.078	0.561	-0.004	2.223	21424.679
S.D.	0.190	1.547	0.330	1.521	0.217	0.120	0.379	222.717
% R.S.D.	799.341	78.045	107.496	18.824	38.667	2960.871	17.029	1.040

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.381	-9.222	0.161	0.007	4.463
S.D.	0.063	3.526	0.354	0.032	10.241
% R.S.D.	16.548	38.240	220.738	498.338	229.465

Identity 1: S96T005142_L Identity 2: .50ml-9.5ml-2ml-8ml 3:59 PM November 19, 1996
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 100.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.226	0.207	25.092	8.292	25.119	-0.468	0.373	0.168
S.D.	0.398	0.030	0.799	0.747	0.924	0.353	0.121	0.077
% R.S.D.	175.890	14.608	3.185	9.007	3.678	75.384	32.542	46.006

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	3.358	12.474	0.039	9.655	1.415	2.555	1.634	-8.782
S.D.	0.071	0.150	0.079	0.642	0.011	0.042	1.071	13.389
% R.S.D.	2.127	1.199	201.136	6.644	0.773	1.653	65.517	152.468

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	8.200	-1.706	0.135	24.991	104.466	0.175	1.266	525.776
S.D.	4.299	2.678	0.071	0.374	1.151	0.000	0.611	5.734
% R.S.D.	52.432	157.023	52.672	1.496	1.102	0.002	48.248	1.091

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.180	-1.462	0.368	4.041	-0.046	0.074	0.925	10801.118
S.D.	0.207	2.956	0.219	0.881	0.127	0.100	0.078	93.144
% R.S.D.	114.979	202.235	59.588	21.803	275.356	134.985	8.403	0.862

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.204	2.542	0.330	0.015	8.348
S.D.	0.019	1.640	0.183	0.003	6.882
% R.S.D.	9.247	64.529	55.421	17.240	82.445

~~WHC~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: S96T005142 Identity 2: .50ml-9.5ml

3:55 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 20.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bf (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.163	0.139	26.982	9.515	24.528	0.024	0.099	0.008
S.D.	0.017	0.001	0.158	0.022	0.144	0.041	0.005	0.005
% R.S.D.	10.319	1.075	0.586	0.233	0.588	165.624	4.772	61.460
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	1.242	12.721	-0.013	12.196	0.587	2.364	-0.162	5.270
S.D.	0.010	0.008	0.039	0.053	0.002	0.017	0.045	0.814
% R.S.D.	0.811	0.059	306.821	0.433	0.282	0.739	27.528	15.450
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.163	0.340	0.018	23.199	106.636	0.171	-0.066	520.862
S.D.	0.373	0.119	0.006	0.433	0.615	0.002	0.122	4.929
% R.S.D.	229.112	34.918	34.481	1.865	0.576	1.420	184.597	0.946
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.008	0.078	0.025	2.915	0.070	0.031	0.837	10441.799
S.D.	0.022	0.175	0.013	0.108	0.005	0.012	0.027	75.665
% R.S.D.	264.741	223.648	53.042	3.700	7.375	38.012	3.212	0.725
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	0.173	0.141	-0.000	0.004	-0.506			
S.D.	0.000	0.322	0.011	0.005	0.386			
% R.S.D.	0.055	228.515	21017.993	114.169	76.345			

Identity 1: S96T005142_D Identity 2: .50ml-9.5ml 4:02 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 20.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.121	0.152	28.929	7.297	25.689	0.229	0.155	0.031
S.D.	0.036	0.004	0.174	0.070	0.124	0.080	0.010	0.007
% R.S.D.	30.159	2.849	0.601	0.964	0.483	35.048	6.598	21.947

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	1.634	11.789	-0.022	11.937	0.643	2.327	0.060	4.219
S.D.	0.008	0.039	0.068	0.044	0.004	0.042	0.065	1.704
% R.S.D.	0.485	0.331	312.715	0.366	0.681	1.804	107.703	40.387

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	1.346	0.396	0.029	24.777	109.427	0.170	0.302	695.933
S.D.	0.488	0.265	0.008	0.351	1.212	0.000	0.122	4.639
% R.S.D.	36.287	66.833	25.653	1.417	1.107	0.000	40.424	0.935

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.018	-0.321	0.017	3.002	0.050	0.009	0.707	9781.744
S.D.	0.017	0.109	0.029	0.318	0.011	0.022	0.022	74.312
% R.S.D.	94.053	33.815	171.039	10.598	22.442	254.322	3.048	0.760

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.204	-0.114	0.071	0.002	0.890
S.D.	0.004	0.074	0.011	0.003	0.615
% R.S.D.	1.891	64.733	14.928	134.282	69.064

Identity 1: S96T005142_A Identity 2: .50ml-2ml-7.5ml
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 20.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

4:06 PM November 19, 1996

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	20.566	20.110	48.435	29.139	44.374	20.565	20.141	17.488
S.D.	0.044	0.042	0.413	0.063	0.004	0.146	0.069	0.076
% R.S.D.	0.214	0.209	0.852	0.215	0.010	0.712	0.343	0.435

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	21.930	32.990	20.290	30.508	19.875	22.979	20.110	44.771
S.D.	0.034	0.174	0.215	0.217	0.047	0.139	0.184	1.133
% R.S.D.	0.157	0.528	1.062	0.711	0.238	0.604	0.914	2.530

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	20.361	20.432	19.817	44.268	128.248	20.300	20.619	528.882
S.D.	0.251	0.113	0.045	0.222	0.824	0.023	0.047	2.353
% R.S.D.	1.231	0.555	0.226	0.502	0.643	0.116	0.229	0.445

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	20.247	18.903	15.400	23.081	19.394	20.137	20.391	10288.589
S.D.	0.034	0.344	0.088	0.267	0.017	0.053	0.034	41.366
% R.S.D.	0.169	1.820	0.572	1.158	0.086	0.265	0.167	0.402

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	20.489	19.710	20.791	20.007	20.473
S.D.	0.068	0.124	0.024	0.082	0.371
% R.S.D.	0.330	0.630	0.118	0.408	1.812

~~HNF~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: S96T005142_10ppm std Identity 2: .50ml-1ml-1ml-7.5ml

4:10 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 20.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	203.405	196.024	232.483	204.051	225.595	-0.316	0.130	175.531
S.D.	0.260	0.228	0.558	0.280	0.225	0.040	0.010	0.871
% R.S.D.	0.128	0.116	0.240	0.137	0.100	12.566	7.579	0.496
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	2.346	205.783	199.956	208.903	196.589	199.613	203.501	7.144
S.D.	0.008	0.604	0.220	0.553	0.201	0.601	0.660	0.943
% R.S.D.	0.325	0.293	0.110	0.265	0.102	0.301	0.324	13.203
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	195.265	194.052	196.429	223.602	301.721	193.787	198.161	691.766
S.D.	0.299	0.305	0.276	0.548	1.588	0.299	0.342	3.191
% R.S.D.	0.153	0.157	0.141	0.245	0.526	0.154	0.172	0.461
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	191.504	183.736	140.915	197.666	175.965	195.025	192.204	10507.338
S.D.	0.352	0.680	0.421	0.888	0.093	0.348	0.161	21.640
% R.S.D.	0.184	0.370	0.299	0.449	0.053	0.178	0.084	0.206
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	196.506	198.521	1.473	196.363	183.288			
S.D.	0.560	1.137	0.031	0.193	0.205			
% R.S.D.	0.285	0.573	2.111	0.098	0.112			

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~~HNF~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: S96T005125 Identity 2: .50ml-9.5ml 4:13 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 20.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.130	0.117	13.323	2.371	9.331	0.123	0.103	0.037
S.D.	0.041	0.007	0.159	0.092	0.184	0.041	0.011	0.012
% R.S.D.	31.324	6.033	1.190	3.878	1.967	33.381	10.515	31.933

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.720	8.842	0.096	6.375	0.311	1.499	0.054	5.693
S.D.	0.014	0.037	0.053	0.053	0.005	0.036	0.074	1.306
% R.S.D.	1.995	0.420	54.861	0.835	1.659	2.391	137.296	22.945

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	1.054	0.195	0.034	30.054	116.007	0.081	0.164	525.419
S.D.	0.381	0.231	0.010	0.096	0.097	0.004	0.033	3.682
% R.S.D.	36.114	118.791	28.118	0.321	0.084	5.175	20.165	0.701

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.077	-0.230	0.334	1.491	0.060	0.021	0.415	12016.088
S.D.	0.020	0.300	0.012	0.275	0.017	0.012	0.009	53.967
% R.S.D.	26.081	130.622	3.681	18.459	28.172	55.604	2.237	0.449

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.105	0.292	0.026	0.013	0.435
S.D.	0.004	0.706	0.017	0.008	0.599
% R.S.D.	3.727	242.083	65.153	61.958	137.847

Identity 1: S96T005125_D Identity 2: .50ml-9.5ml 4:16 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 20.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.127	0.121	20.722	2.669	15.471	-0.057	0.103	0.024
S.D.	0.040	0.003	0.116	0.083	0.055	0.040	0.011	0.011
% R.S.D.	31.240	2.469	0.559	3.120	0.357	71.032	10.467	44.446

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	1.305	7.941	0.045	8.727	0.491	2.041	0.186	3.652
S.D.	0.013	0.089	0.030	0.027	0.002	0.071	0.067	1.262
% R.S.D.	1.003	1.119	66.084	0.309	0.445	3.471	35.842	34.546

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.547	0.282	0.014	31.262	106.584	0.094	0.146	469.797
S.D.	0.460	0.245	0.006	0.525	0.684	0.004	0.137	3.327
% R.S.D.	84.119	86.926	42.016	1.680	0.642	4.480	93.905	0.708

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.007	0.198	0.067	2.372	0.052	0.006	0.365	10440.520
S.D.	0.007	0.190	0.019	0.227	0.004	0.007	0.017	49.451
% R.S.D.	102.989	95.964	28.510	9.575	8.467	120.267	4.633	0.474

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.111	0.111	0.031	0.002	0.864
S.D.	0.004	0.326	0.019	0.003	0.267
% R.S.D.	3.460	294.131	60.401	115.699	30.933

Identity 1: ICSA Identity 2: Quality Control 4:19 PM November 19, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.007	0.003	-0.008	0.016	196.125	-0.009	-0.000	0.000
S.D.	0.002	0.000	0.004	0.003	0.916	0.002	0.001	0.000
% R.S.D.	23.716	6.063	51.343	20.723	0.467	23.430	1420.175	71.147

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.006	0.009	0.008	97.042	101.523	-0.006	-0.043	0.209
S.D.	0.000	0.003	0.004	0.134	0.197	0.002	0.019	0.055
% R.S.D.	4.785	32.666	53.008	0.138	0.194	32.498	43.461	26.115

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.016	0.124	0.002	0.020	0.028	97.535	0.086	174.950
S.D.	0.020	0.012	0.000	0.006	0.005	0.335	0.010	1.353
% R.S.D.	122.605	9.510	18.857	27.806	16.646	0.343	11.456	0.774

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.001	0.023	0.024	-0.002	0.003	0.001	0.018	0.609
S.D.	0.001	0.010	0.003	0.016	0.001	0.001	0.000	0.032
% R.S.D.	126.958	41.959	12.456	707.984	15.985	130.837	1.512	5.295

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.001	-0.011	0.000	0.003	0.066
S.D.	0.001	0.039	0.001	0.000	0.026
% R.S.D.	50.715	364.683	817.022	9.055	38.729

SEE
RE RUN

Identity 1: ICSC Identity 2: Quality Control 4:26 PM November 19, 1996
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.003	0.003	-0.015	0.010	193.555	-0.005	0.000	0.001
S.D.	0.001	0.000	0.009	0.002	0.420	0.004	0.000	0.000
% R.S.D.	35.025	4.537	58.229	24.866	0.217	77.658	155.541	27.295

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.006	0.008	0.009	95.517	100.451	-0.003	-0.033	0.078
S.D.	0.000	0.003	0.000	0.179	0.142	0.001	0.010	0.043
% R.S.D.	4.210	39.011	0.096	0.187	0.141	20.009	29.912	54.392

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.016	0.103	0.002	0.042	0.022	90.867	0.107	175.775
S.D.	0.017	0.008	0.000	0.006	0.011	0.060	0.004	0.483
% R.S.D.	101.525	8.183	14.843	14.911	49.079	0.067	3.678	0.275

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.004	0.033	0.001	-0.006	0.002	0.001	0.014	0.192
S.D.	0.001	0.017	0.001	0.010	0.001	0.001	0.000	0.006
% R.S.D.	31.728	50.786	59.646	158.619	41.287	71.603	1.836	2.933

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.001	-0.025	0.001	0.003	0.090
S.D.	0.001	0.042	0.000	0.000	0.020
% R.S.D.	111.260	167.331	52.731	9.418	22.730

Identity 1: ICSAB Identity 2: Quality Control 4:30 PM November 19, 1996
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 1.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.003	0.003	-0.017	-0.006	192.585	0.483	0.475	0.855
S.D.	0.001	0.000	0.005	0.001	0.580	0.003	0.000	0.002
% R.S.D.	30.214	2.632	27.565	20.699	0.301	0.692	0.091	0.258
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.981	0.959	0.006	96.788	100.061	0.481	-0.031	-0.108
S.D.	0.003	0.005	0.001	0.220	0.241	0.005	0.009	0.020
% R.S.D.	0.261	0.558	20.522	0.227	0.241	1.056	29.669	18.320
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.042	0.072	0.484	0.022	0.034	93.174	0.110	172.171
S.D.	0.005	0.003	0.001	0.005	0.009	0.301	0.009	0.347
% R.S.D.	10.962	4.810	0.126	21.701	25.350	0.323	7.899	0.202
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.004	0.025	1.005	0.947	0.000	0.968	0.016	0.383
S.D.	0.002	0.028	0.001	0.009	0.000	0.004	0.001	0.015
% R.S.D.	39.910	111.101	0.060	0.980	177.434	0.397	5.137	3.927
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	0.489	-0.025	0.494	0.489	0.067			
S.D.	0.001	0.023	0.002	0.001	0.011			
% R.S.D.	0.168	90.092	0.437	0.250	16.298			

Identity 1: CCV Identity 2: Quality Control 4:33 PM November 19, 1996
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bf (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	4.999	4.886	5.141	4.724	4.839	5.060	4.907	4.547
S.D.	0.008	0.012	0.021	0.011	0.031	0.009	0.011	0.007
% R.S.D.	0.159	0.251	0.410	0.233	0.649	0.174	0.234	0.165
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.179	4.977	4.981	5.132	4.842	5.055	5.021	9.610
S.D.	0.005	0.018	0.010	0.042	0.022	0.012	0.035	0.026
% R.S.D.	0.093	0.370	0.203	0.827	0.454	0.237	0.695	0.266
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	4.812	4.866	4.867	4.995	4.894	5.041	5.031	4.561
S.D.	0.021	0.010	0.013	0.039	0.003	0.025	0.004	0.032
% R.S.D.	0.430	0.202	0.261	0.780	0.069	0.486	0.087	0.699
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	5.011	4.711	5.003	4.951	4.741	5.029	5.012	5.308
S.D.	0.007	0.026	0.008	0.005	0.013	0.010	0.014	0.003
% R.S.D.	0.142	0.549	0.151	0.102	0.267	0.190	0.276	0.059
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	5.038	4.793	5.109	5.108	4.565			
S.D.	0.007	0.080	0.006	0.009	0.014			
% R.S.D.	0.133	1.676	0.116	0.171	0.299			

HNF
WHC-SD-WM-DP-201, REV. 1

Identity 1: CCB Identity 2: Quality Control 4:36 PM November 19, 1996
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.005	0.001	0.004	0.007	0.003	-0.003	0.002	0.001
S.D.	0.001	0.000	0.003	0.003	0.004	0.002	0.001	0.000
% R.S.D.	10.522	15.802	92.752	47.646	112.755	58.132	37.139	6.124
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.001	0.005	0.003	-0.004	-0.001	-0.000	-0.007	0.153
S.D.	0.000	0.002	0.003	0.001	0.000	0.001	0.005	0.049
% R.S.D.	73.700	31.516	96.524	31.128	8.807	550.162	64.385	32.002
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.034	0.034	0.001	0.010	0.014	0.001	0.017	0.024
S.D.	0.013	0.008	0.000	0.005	0.005	0.000	0.005	0.001
% R.S.D.	39.233	22.059	8.883	48.732	35.582	19.249	28.027	6.184
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.002	0.009	0.002	0.004	0.002	-0.000	0.005	0.235
S.D.	0.000	0.006	0.001	0.012	0.000	0.000	0.001	0.015
% R.S.D.	26.651	70.643	43.814	277.255	8.022	548.323	20.658	6.539
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	0.001	-0.000	0.003	0.001	0.047			
S.D.	0.000	0.023	0.001	0.000	0.031			
% R.S.D.	17.215	5562.374	27.465	23.225	66.561			

10/15/96 07:02
A-0004-1

FILE # 961015C AMF

WHG-SD-WM-DP-201, REV. 1

Page: 1

LABCORE Data Entry Template for Worklist# 14022

Analyst: B. Golek Instrument: ICP01 Book# 6284A

Method: LA-505-151/161 Rev/Mod 8-3
₁₀₋₁₅₋₉₆

Worklist Comment: ICP B-109 (FUSION)

S Type	Sample#	R A	Test	Matrix	Group#	Project
1	ICV		@ICP-QC	QC		
2	ICB		@ICP-QC	QC		
3	LLS		@ICP-QC	QC		
4	ICSA		@ICP-QC	QC		
5	ICSAB		@ICP-QC	QC		
6	PREPBLKTJA		@ICP-F01	SOLID		
7	SERDIL	S96T005103 0 F	@ICP-F01	SOLID		
8	SAMPLE	S96T005103 0 F	@ICP-F01	SOLID	96001237 B-109	
Analytes Requested: AG-F-01, AL-F-01, AS-F-01, B-F-01, BA-F-01, BE-F-01, BI-F-01, CA-F-01, CD-F-01, CE-F-01, CO-F-01, CR-F-01, CU-F-01, FE-F-01, K-F-01, LA-F-01, LI-F-01, MG-F-01, MN-F-01, MO-F-01, NA-F-01, ND-F-01, NI-F-01, P-F-01, PB-F-01, S-F-01, SB-F-01, SE-F-01, SI-F-01, SM-F-01, SR-F-01, TI-F-01, TL-F-01, U-F-01, V-F-01, ZN-F-01, ZR-F-01						
9	DUP	S96T005103 0 F	@ICP-F01	SOLID		
10	SPK	S96T005103 0 F	@ICP-F01	SOLID		
* 3PK 10/15/96			@ICP-QC	QC		
11	CCV		@ICP-QC	QC		
12	CCB		@ICP-QC	QC		
13	SERDIL	S96T005109 0 F	@ICP-F01	SOLID		
14	SAMPLE	S96T005109 0 F	@ICP-F01	SOLID	96001237 B-109	
Analytes Requested: AG-F-01, AL-F-01, AS-F-01, B-F-01, BA-F-01, BE-F-01, BI-F-01, CA-F-01, CD-F-01, CE-F-01, CO-F-01, CR-F-01, CU-F-01, FE-F-01, K-F-01, LA-F-01, LI-F-01,						

Data Entry Comments:

Sample result calculation:

$$S96T005103 \text{ Al} = 32.7 \text{ TL ug} \times \frac{1}{2.123 \frac{\text{g}}{\text{L}} \times \frac{1 \text{ L}}{100 \text{ mL}}} = 1.54 \pm 4 \text{ ug/g}$$

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Note: $2.123 \frac{\text{g}}{\text{L}}$ is sample prep dilution factor

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LABCORE Data Entry Template for Worklist# 14022

S Type	Sample#	R A	Test	Matrix	Group#	Project
			MG-F-01 , MN-F-01 , MO-F-01* , NA-F-01 , ND-F-01 , NI-F-01 , P-F-01 , PB-F-01 , S-F-01 , SB-F-01 , SE-F-01 , SI-F-01 , SM-F-01 , SR-F-01 , TI-F-01 , TL-F-01 , U-F-01 , V-F-01 , ZN-F-01 , ZR-F-01			
15 DUP	S96T005109	0 F	@ICP-F01	SOLID		
16 SPK	S96T005109	0 F	@ICP-F01	SOLID		
* SPK 10ppm						
17 SAMPLE	S96T005113	0 F	@ICP-F01	SOLID	96001237	B-109
	Analytes Requested: AG-F-01 , AL-F-01 , AS-F-01 , B-F-01 , BA-F-01 , BE-F-01 , BI-F-01 , CA-F-01 , CD-F-01 , CE-F-01 , CO-F-01 , CR-F-01 , CU-F-01 , FE-F-01 , K-F-01 , LA-F-01 , LI-F-01 , MG-F-01 , MN-F-01 , MO-F-01 , NA-F-01 , ND-F-01 , NI-F-01 , P-F-01 , PB-F-01 , S-F-01 , SB-F-01 , SE-F-01 , SI-F-01 , SM-F-01 , SR-F-01 , TI-F-01 , TL-F-01 , U-F-01 , V-F-01 , ZN-F-01 , ZR-F-01					
18 DUP	S96T005113	0 F	@ICP-F01	SOLID		
19 ICSA			@ICP-QC	QC		
20 ICSAB			@ICP-QC	QC		
21 CCV			@ICP-QC	QC		
22 CCB			@ICP-QC	QC		

Final page for worklist # 14022

Analyst Signature	Date	DF	Analyst Signature	Date	DF
<i>[Signature]</i>	10-15-96		<i>[Signature]</i>	10/16/96	
PREPARED	250ml - 10ml	15 (300-1570)	S96T005113	250ml - 10ml	41
S96T005103-L	250ml - 10ml - 2ml - 205		5113-D	250ml - 10ml	41
S	5103	250ml - 10ml			
5103-D	250ml - 10ml	41			
5103-A	250ml - 205ml (300) - 2.35ml	41			
5103-AD	250ml - 10ml - 2ml - 100ml - 100ml - 5.35ml	205			
S96T005109-L	250ml - 10ml - 2ml - 205				
5109	250ml - 10ml	41			
5109-D	250ml - 10ml	41			
5109-A	250ml - 205ml (300) - 2.35ml	41			
5109-AD	250ml - 10ml - 2ml - 100ml - 100ml - 5.35ml	205			

Data Entry Comments:

sphre missing calculation?

$$S96T005103 \quad Al = \left(\frac{75.507}{41} \right) - \left(\frac{32.759}{41} \right) \times 100 = 104.3\%$$

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Note: spike true value is 1.0 ppm for all elements except for U = 2.0 ppm.

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~~WHE~~
WHE-SD-WM-DP-201, REV. 1

Identity 1: ICV Identity 2: Quality Control 7:57 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	5.008	5.059	5.325	5.080	5.031	5.153	5.022	5.028
S.D.	0.010	0.015	0.009	0.021	0.015	0.024	0.013	0.022
% R.S.D.	0.207	0.306	0.165	0.413	0.299	0.465	0.251	0.438
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.174	5.068	5.067	5.070	4.831	5.090	5.105	9.821
S.D.	0.025	0.028	0.010	0.006	0.010	0.025	0.012	0.029
% R.S.D.	0.476	0.552	0.196	0.112	0.201	0.493	0.239	0.294
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.259	5.006	5.061	5.425	5.153	5.055	5.216	5.020
S.D.	0.035	0.010	0.014	0.083	0.028	0.022	0.035	0.023
% R.S.D.	0.666	0.193	0.275	1.523	0.548	0.436	0.665	0.462
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	5.123	5.182	5.057	5.115	4.903	5.073	5.098	5.124
S.D.	0.025	0.031	0.014	0.038	0.016	0.010	0.013	0.007
% R.S.D.	0.485	0.606	0.276	0.734	0.329	0.193	0.253	0.130
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	5.049	4.760	5.126	5.148	4.789			
S.D.	0.011	0.071	0.009	0.008	0.006			
% R.S.D.	0.227	1.487	0.171	0.163	0.131			

SJG
10-15-96

B-109 Fusion

250-1-10-1

596700 5703, 5708, 5713

File # 56105C.DAT

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 157 TO 180

HNF
WHC-SD-WM-DP-201, REV. 1

Identity 1: ICB Identity 2: Quality Control 8:01 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.001	0.001	0.016	-0.001	0.005	-0.006	-0.000	0.001
S.D.	0.001	0.000	0.003	0.003	0.003	0.002	0.000	0.000
% R.S.D.	101.069	25.347	16.594	241.109	59.625	29.000	129.502	62.452

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.001	0.002	-0.001	0.001	0.002	-0.001	0.006	0.022
S.D.	0.000	0.001	0.001	0.001	0.000	0.001	0.011	0.051
% R.S.D.	27.849	44.397	60.306	67.371	8.248	100.009	192.405	228.708

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.006	0.000	0.001	-0.013	0.000	0.001	0.007	0.000
S.D.	0.013	0.009	0.000	0.005	0.001	0.000	0.004	0.003
% R.S.D.	219.896	19445.281	36.740	34.172	460.634	20.373	60.317	593701.488

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.003	0.032	0.002	0.007	0.001	0.000	0.003	0.013
S.D.	0.001	0.012	0.001	0.012	0.001	0.001	0.001	0.018
% R.S.D.	21.820	38.267	52.178	178.911	39.703	326.936	41.224	140.433

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	-0.000	0.062	0.001	0.001	-0.007
S.D.	0.000	0.019	0.000	0.000	0.024
% R.S.D.	167.671	29.864	49.424	16.295	343.802

~~LINE~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: LLS Identity 2: Quality Control 8:05 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.019	0.021	0.189	0.107	0.112	0.040	0.020	0.021
S.D.	0.001	0.000	0.011	0.005	0.007	0.002	0.001	0.000
% R.S.D.	3.692	0.463	5.957	4.810	6.636	4.020	3.119	0.969

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Md (ppm)	U (ppm)
Mean	0.021	0.042	0.098	0.103	0.208	0.024	0.223	0.408
S.D.	0.000	0.001	0.001	0.003	0.001	0.001	0.012	0.055
% R.S.D.	1.298	2.418	0.710	2.452	0.340	2.914	5.419	13.363

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.212	0.221	0.104	0.393	0.194	0.203	0.207	0.206
S.D.	0.011	0.012	0.000	0.003	0.008	0.000	0.008	0.004
% R.S.D.	5.365	5.568	0.168	0.783	4.023	0.166	3.826	1.716

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.094	0.223	0.022	0.224	0.020	0.010	0.098	0.481
S.D.	0.003	0.009	0.001	0.008	0.000	0.001	0.000	0.010
% R.S.D.	2.746	4.217	4.806	3.373	2.389	5.357	0.354	2.122

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.019	0.097	0.098	0.011	0.423
S.D.	0.000	0.015	0.001	0.000	0.025
% R.S.D.	2.650	15.506	1.079	3.158	6.003

Identity 1: ICSA Identity 2: Quality Control 8:08 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.002	0.003	-0.024	-0.022	203.644	0.005	0.001	0.001
S.D.	0.001	0.000	0.012	0.003	0.723	0.002	0.000	0.000
% R.S.D.	36.780	4.157	48.618	15.820	0.355	30.996	40.602	34.002

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.007	0.002	-0.004	95.934	104.576	0.000	0.008	-0.040
S.D.	0.000	0.002	0.002	0.180	0.237	0.002	0.011	0.037
% R.S.D.	2.504	82.357	50.256	0.188	0.226	838.773	145.164	93.814

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.040	0.041	0.002	0.005	-0.059	101.267	-0.001	192.344
S.D.	0.011	0.006	0.000	0.009	0.009	0.167	0.005	0.552
% R.S.D.	27.895	15.220	10.848	196.180	15.855	0.165	361.069	0.287

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.000	-0.006	0.003	0.015	-0.000	0.001	0.015	0.026
S.D.	0.001	0.011	0.000	0.019	0.000	0.001	0.001	0.009
% R.S.D.	269.432	194.971	14.237	126.437	123.230	109.648	9.956	34.185

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	-0.004	0.003	0.003	0.004	0.080
S.D.	0.000	0.014	0.001	0.000	0.013
% R.S.D.	8.240	441.080	30.588	3.888	16.233

HNF
WHG-SD-WM-DP-201, REV. 1

Identity 1: ICSAB Identity 2: Quality Control 8:11 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.002	0.003	-0.038	-0.017	205.901	0.503	0.488	0.955
S.D.	0.001	0.000	0.002	0.004	0.441	0.003	0.002	0.005
% R.S.D.	59.495	1.408	4.661	25.928	0.214	0.636	0.393	0.528
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	1.018	0.988	0.002	96.749	105.078	0.500	0.003	-0.037
S.D.	0.001	0.006	0.002	0.217	0.147	0.003	0.003	0.043
% R.S.D.	0.116	0.614	111.108	0.224	0.139	0.585	77.960	117.906
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Hg (ppm)	As (ppm)	Na (ppm)
Mean	0.034	0.060	0.507	-0.009	-0.020	104.548	0.003	192.189
S.D.	0.004	0.006	0.001	0.008	0.005	0.131	0.006	0.702
% R.S.D.	12.989	9.617	0.227	90.448	24.499	0.126	214.073	0.365
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Cd (ppm)	R (ppm)	K (ppm)
Mean	0.000	-0.004	1.042	1.010	0.001	0.998	0.017	0.130
S.D.	0.000	0.037	0.000	0.017	0.000	0.003	0.001	0.013
% R.S.D.	168.890	922.377	0.035	1.683	67.743	0.270	4.225	10.312
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	0.496	0.036	0.506	0.497	0.074			
S.D.	0.000	0.010	0.001	0.002	0.011			
% R.S.D.	0.088	28.351	0.225	0.336	15.223			

~~WHC~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: prepbikarl Identity 2: .250ml-10ml 8:20 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.000	0.001	-0.009	0.006	0.008	-0.005	-0.000	-0.000
S.D.	0.001	0.000	0.007	0.001	0.001	0.003	0.000	0.000
% R.S.D.	995.601	4.615	75.024	20.440	14.630	63.539	154.935	210.685
<hr/>								
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.000	0.098	-0.003	-0.001	-0.002	0.001	0.003	-0.044
S.D.	0.000	0.001	0.004	0.001	0.000	0.001	0.006	0.030
% R.S.D.	263.945	1.303	130.032	123.920	1.546	135.115	220.714	69.821
<hr/>								
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.007	-0.029	0.000	-0.003	-0.004	0.001	0.005	2.132
S.D.	0.008	0.006	0.000	0.004	0.001	0.000	0.002	0.005
% R.S.D.	110.505	19.433	529.156	127.490	34.183	10.188	32.186	0.217
<hr/>								
	Mo	Se	Ag	Pb	Tl	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.002	0.005	0.001	0.011	0.000	-0.000	-0.003	371.406
S.D.	0.001	0.012	0.001	0.003	0.000	0.001	0.001	1.226
% R.S.D.	54.288	235.957	81.783	28.704	897.953	616.770	32.539	0.330
<hr/>								
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	0.001	0.003	0.000	0.000	0.015			
S.D.	0.000	0.036	0.001	0.000	0.013			
% R.S.D.	24.553	1108.685	713.891	92.298	89.158			

Identity 1: S96T005103_L Identity 2: .250ml-10ml-2ml-8ml

8:25 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 205.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.435	0.118	0.582	4.704	36.024	-0.283	0.118	0.046
S.D.	0.232	0.020	0.762	0.426	0.484	0.333	0.060	0.041
% R.S.D.	53.289	16.973	131.004	9.065	1.344	117.559	50.960	88.315
	Zn (ppm)	Mn (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.412	5.164	-0.402	15.976	1.017	10.196	1.287	-17.108
S.D.	0.072	0.480	0.240	0.160	0.008	0.132	0.870	6.824
% R.S.D.	17.494	9.300	59.650	1.000	0.743	1.297	67.571	39.887
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.999	-3.019	0.167	145.282	-0.522	0.344	0.435	474.306
S.D.	2.363	1.303	0.037	3.599	0.547	0.020	1.335	1.919
% R.S.D.	39.386	43.169	22.304	2.477	104.765	5.777	307.313	0.405
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.211	1.145	0.257	6.993	0.061	0.164	0.032	15442.594
S.D.	0.050	2.011	0.118	0.943	0.095	0.134	0.172	66.696
% R.S.D.	23.575	175.600	45.767	13.485	156.991	81.687	530.878	0.432
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Ti (ppm)			
Mean	0.555	3.115	0.695	0.121	7.957			
S.D.	0.034	0.846	0.214	0.027	4.399			
% R.S.D.	6.071	27.174	30.778	22.133	55.281			

~~WHC~~
WHC-SD-WM-DP-201, REV. 1

Identity 1: S96T005103 Identity 2: .250ml-10ml 8:29 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 41.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.015	0.072	0.492	5.882	32.759	-0.090	-0.008	-0.003
S.D.	0.059	0.007	0.111	0.170	0.309	0.066	0.029	0.012
% R.S.D.	394.211	9.563	22.609	2.883	0.945	73.351	369.171	392.644
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.209	4.586	-0.030	14.835	0.829	10.122	0.290	-0.759
S.D.	0.002	0.080	0.049	0.199	0.005	0.102	0.216	2.651
% R.S.D.	1.182	1.749	162.651	1.338	0.658	1.006	74.336	349.016
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Hg (ppm)	As (ppm)	Na (ppm)
Mean	-0.424	0.090	0.085	146.549	1.049	0.303	0.607	461.677
S.D.	0.652	0.450	0.011	1.145	0.157	0.004	0.123	3.141
% R.S.D.	153.859	501.548	13.026	0.782	14.937	1.312	20.315	0.680
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.062	-0.748	0.037	0.488	0.061	0.013	0.024	14771.077
S.D.	0.024	0.528	0.030	0.038	0.030	0.038	0.029	90.039
% R.S.D.	38.770	70.560	80.796	7.849	49.779	293.264	119.780	0.610
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	0.573	0.334	0.064	0.015	-0.878			
S.D.	0.018	1.164	0.050	0.006	1.385			
% R.S.D.	3.113	348.390	77.133	37.909	157.653			

Identity 1: S96T005103_0 Identity 2: .250ml-10ml 8:33 PM October 15, 1996
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 41.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr	Sr	Ri	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.055	0.085	1.255	13.611	62.558	0.033	0.034	0.016
S.D.	0.030	0.003	0.355	0.133	0.487	0.000	0.010	0.002
% R.S.D.	54.796	3.061	28.269	0.977	0.779	0.871	29.819	10.895
<hr/>								
	Zn	Mi	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.312	10.230	0.294	47.638	0.837	14.615	0.492	3.466
S.D.	0.006	0.162	0.027	0.082	0.002	0.111	0.369	1.069
% R.S.D.	1.942	1.583	9.298	0.173	0.181	0.756	74.962	30.842
<hr/>								
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.366	0.013	0.125	133.174	0.909	0.535	0.451	433.094
S.D.	0.243	0.153	0.002	0.682	0.041	0.004	0.157	0.937
% R.S.D.	66.316	1150.144	1.450	0.512	4.518	0.744	34.876	0.216
<hr/>								
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	0.089	0.959	0.091	0.955	0.139	0.001	-0.052	13839.379
S.D.	0.020	0.277	0.011	0.209	0.008	0.020	0.055	41.034
% R.S.D.	22.443	28.844	12.480	21.860	5.876	1356.593	104.984	0.297
<hr/>								
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	1.162	0.449	0.056	0.022	0.688			
S.D.	0.007	0.287	0.007	0.009	0.476			
% R.S.D.	0.588	64.057	12.747	42.804	69.125			

Identity 1: S96T005103_A Identity 2: .250ml-2.05ml-7.95ml

8:37 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 41.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	41.415	42.337	43.412	47.633	75.507	41.693	42.213	40.018
S.D.	0.102	0.029	0.271	0.284	0.078	0.435	0.087	0.244
% R.S.D.	0.246	0.068	0.623	0.596	0.104	1.043	0.207	0.611
<hr/>								
	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	41.430	45.657	42.159	56.405	39.643	51.504	43.459	80.316
S.D.	0.122	0.030	0.072	0.349	0.008	0.340	0.284	2.342
% R.S.D.	0.294	0.067	0.170	0.618	0.021	0.659	0.653	2.916
<hr/>								
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	45.105	40.599	42.388	192.918	42.866	40.271	42.351	508.827
S.D.	0.812	0.321	0.019	0.580	0.382	0.185	0.414	2.853
% R.S.D.	1.801	0.791	0.044	0.301	0.890	0.461	0.977	0.561
<hr/>								
	Mo	Se	Ag	Pb	Tl	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	41.724	41.540	33.892	42.261	40.494	40.983	40.677	14914.120
S.D.	0.325	0.446	0.198	0.275	0.099	0.238	0.081	94.333
% R.S.D.	0.780	1.074	0.584	0.650	0.245	0.581	0.198	0.633
<hr/>								
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	41.504	38.851	42.175	41.274	42.803			
S.D.	0.238	1.263	0.174	0.052	1.052			
% R.S.D.	0.574	3.251	0.412	0.126	2.458			

Identity 1: S96T005103_AD Identity 2: .250-10-2-2.05-5.95

8:41 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 205.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	2162.580	2137.586	2266.606	2247.847	2267.763	-4.410	0.375	2086.016
S.D.	3.324	3.289	6.850	2.215	5.529	0.008	0.086	1.088
% R.S.D.	0.154	0.154	0.302	0.099	0.244	0.188	22.929	0.052

	Zn (ppm)	Mi (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	6.210	2130.438	2157.474	2138.222	2093.057	2155.365	2155.573	-164.633
S.D.	0.078	5.306	3.574	9.428	3.873	1.012	11.618	5.312
% R.S.D.	1.254	0.249	0.166	0.441	0.185	0.047	0.539	3.227

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	2209.384	2133.808	2152.894	2514.388	2233.310	2158.230	2210.770	2574.117
S.D.	3.774	3.093	5.586	14.865	14.249	2.063	4.756	4.873
% R.S.D.	0.171	0.145	0.259	0.591	0.638	0.096	0.215	0.189

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	2121.806	2185.078	1688.484	2161.043	1935.690	2130.990	2116.695	17387.043
S.D.	3.312	8.384	1.896	5.856	2.582	3.593	5.091	10.859
% R.S.D.	0.156	0.384	0.112	0.271	0.133	0.169	0.241	0.062

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	2126.632	2100.601	16.616	2154.715	1996.131
S.D.	2.552	9.697	0.085	1.708	1.500
% R.S.D.	0.120	0.462	0.514	0.079	0.075

Identity 1: CCV Identity 2: Quality Control 8:45 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Rf (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	5.074	5.155	5.378	5.079	5.121	5.120	5.129	5.109
S.D.	0.008	0.008	0.036	0.004	0.012	0.007	0.011	0.041
% R.S.D.	0.167	0.162	0.677	0.074	0.235	0.137	0.216	0.802

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.109	5.063	5.151	5.061	4.925	5.060	5.255	10.223
S.D.	0.005	0.009	0.005	0.014	0.004	0.004	0.016	0.027
% R.S.D.	0.098	0.187	0.106	0.281	0.090	0.075	0.297	0.260

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.276	5.176	5.182	5.463	5.167	5.021	5.242	5.098
S.D.	0.009	0.008	0.010	0.015	0.019	0.004	0.010	0.041
% R.S.D.	0.173	0.160	0.189	0.272	0.372	0.081	0.185	0.808

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	5.116	5.269	5.063	5.081	4.958	5.069	5.116	5.079
S.D.	0.003	0.028	0.006	0.035	0.008	0.008	0.012	0.053
% R.S.D.	0.066	0.539	0.123	0.680	0.152	0.153	0.228	1.044

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	5.040	4.799	5.140	5.200	4.806
S.D.	0.002	0.037	0.006	0.004	0.016
% R.S.D.	0.035	0.780	0.107	0.067	0.340

Identity 1: CCB Identity 2: Quality Control 8:58 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.000	0.000	-0.006	-0.002	0.007	-0.004	0.000	0.000
S.D.	0.001	0.000	0.007	0.002	0.004	0.003	0.000	0.000
% R.S.D.	181.172	27.273	116.071	70.863	58.491	75.008	539.744	44.096
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.000	-0.001	0.002	0.003	0.001	-0.000	0.002	-0.007
S.D.	0.000	0.002	0.001	0.002	0.000	0.001	0.005	0.025
% R.S.D.	60.487	184.020	29.164	80.203	0.000	732.130	214.642	340.086
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.024	0.003	0.000	-0.030	-0.007	0.000	0.010	0.004
S.D.	0.008	0.005	0.000	0.007	0.005	0.000	0.005	0.000
% R.S.D.	34.150	168.804	12.385	24.828	72.175	0.001	48.617	0.011
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.002	0.012	0.003	-0.002	0.000	-0.000	0.000	-0.005
S.D.	0.001	0.012	0.000	0.002	0.000	0.001	0.001	0.020
% R.S.D.	24.247	104.832	15.520	77.196	424.719	179.516	175.624	429.029
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	-0.001	0.013	0.002	0.000	0.027			
S.D.	0.000	0.016	0.001	0.000	0.020			
% R.S.D.	0.317	119.894	26.884	34.116	75.247			

Identity 1: S96T005109_L Identity 2: .250ml-10ml-2ml-8ml

9:02 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 205.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.503	0.113	-0.410	7.121	232.546	0.099	0.154	-0.016
S.D.	0.097	0.013	2.546	0.448	0.834	0.332	0.036	0.027
% R.S.D.	19.214	11.538	620.926	6.285	0.359	335.878	23.155	168.731

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.436	1.143	0.413	4.619	2.754	4.397	0.051	34.495
S.D.	0.062	0.388	0.276	0.229	0.000	0.480	0.437	5.520
% R.S.D.	14.147	33.977	66.811	4.949	0.000	10.909	862.285	16.003

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	1.935	-1.905	0.081	42.473	1.105	0.516	0.573	289.934
S.D.	0.898	1.363	0.007	1.012	0.683	0.020	1.247	0.949
% R.S.D.	46.407	71.556	8.449	2.382	61.790	3.848	217.668	0.327

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.230	0.106	0.577	1.544	0.140	0.135	-0.697	14663.899
S.D.	0.158	3.061	0.094	1.111	0.041	0.127	0.110	40.310
% R.S.D.	68.789	2897.569	16.337	72.007	29.234	94.563	15.793	0.275

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.864	2.644	0.496	0.100	14.830
S.D.	0.059	5.734	0.003	0.027	2.823
% R.S.D.	6.810	216.872	0.663	27.515	19.039

Identity 1: S96T005109 Identity 2: .250ml-10ml 9:05 PM October 15, 1996
 Task name : OPTIMA
 Sample Weight : 1.0000 Solution Volume : 41.00
 On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bf (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.107	0.106	1.611	8.727	235.020	0.024	0.052	0.016
S.D.	0.013	0.003	0.018	0.108	0.149	0.066	0.011	0.007
% R.S.D.	11.866	2.459	1.139	1.237	0.063	280.911	20.723	44.416
	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.162	2.059	0.101	4.827	2.669	4.612	0.702	46.319
S.D.	0.010	0.061	0.055	0.072	0.011	0.072	0.116	1.067
% R.S.D.	5.927	2.982	54.167	1.483	0.397	1.554	16.487	2.304
	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	1.015	-1.277	0.055	46.287	1.334	0.530	0.394	283.888
S.D.	0.273	0.140	0.006	0.750	0.135	0.004	0.152	0.685
% R.S.D.	26.882	10.975	10.870	1.621	10.097	0.750	38.683	0.241
	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.163	-0.758	0.081	0.775	0.188	0.071	0.091	14098.025
S.D.	0.030	0.542	0.004	0.590	0.017	0.015	0.031	32.846
% R.S.D.	18.657	71.576	4.591	76.202	9.250	21.825	34.344	0.233
	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)			
Mean	1.033	1.943	0.151	0.012	2.972			
S.D.	0.012	0.306	0.022	0.009	0.547			
% R.S.D.	1.161	15.769	14.357	80.168	18.389			

Identity 1: S96T005109_D Identity 2: .250ml-10ml 9:08 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 41.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.036	0.113	1.777	10.214	252.807	0.333	0.057	0.008
S.D.	0.042	0.003	0.263	0.055	0.938	0.133	0.014	0.005
% R.S.D.	114.533	2.665	14.798	0.540	0.371	39.895	24.786	60.549

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.212	2.536	0.091	5.731	2.939	5.638	0.606	58.023
S.D.	0.006	0.066	0.048	0.078	0.011	0.112	0.400	0.941
% R.S.D.	2.793	2.599	52.702	1.363	0.361	1.993	65.999	1.622

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.423	-0.539	0.052	37.026	1.887	0.617	0.272	281.134
S.D.	0.268	0.132	0.006	0.186	0.070	0.004	0.089	1.897
% R.S.D.	63.463	24.447	12.026	0.503	3.713	0.644	32.886	0.675

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.050	0.109	-0.017	-0.071	0.205	0.017	0.148	13827.124
S.D.	0.032	0.807	0.014	0.289	0.003	0.021	0.009	62.404
% R.S.D.	63.261	741.783	81.130	408.044	1.430	123.844	5.874	0.451

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	1.297	-0.052	0.101	0.036	2.273
S.D.	0.018	0.076	0.020	0.006	0.513
% R.S.D.	1.404	144.986	20.091	15.586	22.579

~~HNF~~
WHC-SD-WM-DP-201, REV.1

Identity 1: S96T005109_A Identity 2: .250ml-2.05ml-7.95ml

9:12 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 41.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	42.069	42.480	46.401	51.517	274.489	42.342	42.130	39.587
S.D.	0.086	0.132	0.369	0.206	0.482	0.304	0.148	0.243
% R.S.D.	0.204	0.311	0.795	0.400	0.176	0.719	0.352	0.614
<hr/>								
	Zn	Ni	La	Fe	Ca	Cr	Md	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	42.396	43.878	42.755	46.679	42.159	46.460	42.867	138.933
S.D.	0.177	0.260	0.119	0.272	0.135	0.036	0.631	2.433
% R.S.D.	0.418	0.592	0.278	0.584	0.320	0.078	1.473	1.751
<hr/>								
	Ce	Sm	Ba	P	S	Mg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	41.928	42.423	42.367	90.677	42.931	41.300	42.778	320.560
S.D.	0.691	0.456	0.151	0.704	0.445	0.121	0.324	1.635
% R.S.D.	1.648	1.074	0.357	0.777	1.036	0.292	0.757	0.510
<hr/>								
	Mo	Se	Ag	Pb	Ti	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	42.205	42.046	33.588	43.329	41.055	41.678	41.235	14044.896
S.D.	0.198	0.805	0.117	0.099	0.108	0.063	0.193	80.046
% R.S.D.	0.469	1.915	0.348	0.228	0.263	0.151	0.468	0.570
<hr/>								
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	42.754	39.919	42.587	41.933	39.979			
S.D.	0.012	1.216	0.157	0.043	0.851			
% R.S.D.	0.028	3.047	0.369	0.104	2.130			

Identity 1: S96T005109_AD Identity 2: .250-10-2-2.05-5.95

9:16 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 205.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	2134.242	2128.838	2219.261	2176.513	2412.093	-5.865	0.307	2106.402
S.D.	3.246	5.508	6.379	2.752	4.071	0.329	0.044	7.569
% R.S.D.	0.152	0.259	0.287	0.126	0.169	5.608	14.286	0.359

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	6.538	2055.452	2150.685	2075.674	2095.135	2064.934	2214.891	-101.716
S.D.	0.031	2.910	4.909	4.842	5.075	1.511	3.855	6.544
% R.S.D.	0.468	0.142	0.228	0.233	0.242	0.073	0.174	6.433

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	2180.682	2167.522	2162.433	2323.114	2133.510	2062.095	2145.384	2403.379
S.D.	6.869	6.852	5.761	9.966	6.273	0.832	3.996	7.000
% R.S.D.	0.315	0.316	0.266	0.429	0.294	0.040	0.186	0.291

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	2029.480	2139.547	1603.770	2091.164	1895.593	2062.278	2087.735	16804.586
S.D.	1.182	9.512	6.628	5.188	3.949	1.082	4.756	25.415
% R.S.D.	0.058	0.445	0.413	0.248	0.208	0.052	0.228	0.151

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	2059.656	2053.702	15.968	2127.400	1977.890
S.D.	1.196	9.756	0.070	3.300	7.370
% R.S.D.	0.058	0.475	0.441	0.155	0.373

HNF
WHC-SD-WM-DP-201, REV. 1

Identity 1: S96T005113 Identity 2: .250ml-10ml 9:20 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 41.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.025	0.204	4.792	36.269	188.735	0.359	0.137	0.353
S.D.	0.070	0.003	0.298	0.159	0.136	0.066	0.023	0.008
% R.S.D.	277.521	1.480	6.213	0.439	0.072	18.475	16.509	2.197

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.349	11.286	0.767	12.184	5.223	2.934	0.953	44.973
S.D.	0.002	0.200	0.215	0.190	0.003	0.051	0.303	1.870
% R.S.D.	0.700	1.769	28.048	1.562	0.058	1.737	31.805	4.158

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	1.294	-1.674	0.143	72.955	0.488	1.402	0.413	296.708
S.D.	0.316	0.302	0.011	0.866	0.137	0.004	0.098	1.277
% R.S.D.	24.389	18.026	7.949	1.187	28.142	0.284	23.605	0.431

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.142	-0.911	0.359	1.174	0.620	0.126	0.330	14082.843
S.D.	0.064	0.658	0.053	0.190	0.008	0.031	0.056	56.027
% R.S.D.	45.528	72.161	14.640	16.180	1.293	24.437	17.011	0.398

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	3.078	1.083	0.165	0.061	1.399
S.D.	0.048	1.087	0.024	0.006	1.192
% R.S.D.	1.560	100.332	14.559	8.994	85.227

Identity 1: S961005113_D Identity 2: .250ml-10ml 9:23 PM October 15, 1996

Task name: OPTIMA

Sample Weight : 1.0000 Solution Volume : 41.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.255	0.181	6.965	45.163	203.304	0.238	0.048	0.473
S.D.	0.047	0.005	0.024	0.019	0.230	0.066	0.008	0.008
% R.S.D.	18.403	3.002	0.344	0.042	0.113	27.937	15.823	1.642

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.439	11.919	1.015	15.783	6.086	3.616	0.354	66.615
S.D.	0.020	0.081	0.027	0.155	0.017	0.060	0.080	1.237
% R.S.D.	4.596	0.683	2.654	0.979	0.277	1.656	22.623	1.857

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.390	0.530	0.104	51.113	0.414	1.893	0.553	254.990
S.D.	0.448	0.389	0.005	0.167	0.069	0.004	0.103	0.523
% R.S.D.	114.947	73.476	5.163	0.326	16.605	0.210	18.697	0.205

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Tl (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.080	0.241	0.245	1.518	0.785	0.052	0.194	14697.791
S.D.	0.037	0.349	0.031	0.364	0.009	0.010	0.022	37.471
% R.S.D.	46.390	144.801	12.501	23.997	1.200	19.500	11.453	0.255

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	4.203	0.065	0.082	0.031	1.244
S.D.	0.030	0.343	0.030	0.005	0.743
% R.S.D.	0.710	526.776	36.647	17.312	59.678

~~WHG~~ SD-WM-DP-201, REV. 1

Identity 1: IC5A Identity 2: Quality Control 9:28 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.003	0.002	-0.023	-0.007	204.487	0.004	-0.000	0.000
S.D.	0.001	0.000	0.004	0.001	0.432	0.002	0.000	0.000
% R.S.D.	16.602	1.480	19.886	19.032	0.211	39.790	153.708	9.862

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.006	0.004	0.005	95.494	105.154	-0.003	-0.007	0.096
S.D.	0.000	0.000	0.002	0.045	0.086	0.001	0.013	0.010
% R.S.D.	4.162	3.969	36.102	0.047	0.082	18.800	185.885	10.927

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.009	0.062	0.002	-0.012	-0.054	100.804	-0.009	194.570
S.D.	0.003	0.002	0.000	0.005	0.008	0.418	0.000	0.391
% R.S.D.	35.585	3.428	2.374	40.727	14.426	0.415	2.160	0.201

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.001	0.048	0.022	0.009	0.001	-0.000	0.012	0.020
S.D.	0.000	0.004	0.002	0.008	0.000	0.001	0.000	0.011
% R.S.D.	70.226	7.648	7.373	87.957	27.314	914.922	0.867	53.371

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	-0.005	-0.023	-0.000	0.003	0.057
S.D.	0.001	0.006	0.000	0.000	0.007
% R.S.D.	22.038	28.006	118.979	7.513	12.003

Identity 1: ICSAB Identity 2: Quality Control 9:39 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr	Sr	Bi	Si	Al	Co	Cu	Li
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.000	0.002	-0.016	-0.017	205.134	0.502	0.489	0.955
S.D.	0.002	0.000	0.013	0.003	0.399	0.000	0.002	0.004
% R.S.D.	4662.008	5.145	78.427	15.704	0.194	0.033	0.376	0.459
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	Zn	Ni	La	Fe	Ca	Cr	Nd	U
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	1.011	0.994	0.002	97.146	105.650	0.500	-0.001	0.058
S.D.	0.003	0.005	0.001	0.114	0.128	0.005	0.010	0.065
% R.S.D.	0.317	0.550	30.476	0.117	0.121	1.097	710.756	111.283
<hr/>								
	Ce	Sm	Ba	P	S	Hg	As	Na
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.016	0.064	0.511	-0.007	-0.047	103.964	-0.013	192.350
S.D.	0.020	0.013	0.001	0.012	0.004	0.204	0.004	0.836
% R.S.D.	123.494	21.001	0.261	174.603	7.612	0.196	28.327	0.435
<hr/>								
	Mo	Se	Ag	Pb	Tl	Cd	B	K
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Mean	-0.001	0.036	1.040	0.998	0.001	0.994	0.015	0.118
S.D.	0.000	0.026	0.001	0.027	0.001	0.002	0.000	0.019
% R.S.D.	22.105	73.357	0.110	2.670	55.996	0.240	3.121	16.096
<hr/>								
	Mn	Sb	V	Be	Tl			
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)			
Mean	0.494	0.011	0.502	0.501	-0.016			
S.D.	0.003	0.022	0.001	0.001	0.032			
% R.S.D.	0.562	203.513	0.274	0.226	203.583			

Identity 1: CCV Identity 2: Quality Control 9:44 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	5.051	5.108	5.326	5.036	5.041	5.066	5.090	5.002
S.D.	0.004	0.009	0.024	0.010	0.019	0.019	0.008	0.012
% R.S.D.	0.079	0.178	0.455	0.200	0.381	0.368	0.167	0.244

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.079	5.045	5.136	5.064	4.899	5.036	5.262	10.148
S.D.	0.010	0.013	0.010	0.007	0.007	0.011	0.018	0.030
% R.S.D.	0.188	0.261	0.195	0.130	0.147	0.213	0.347	0.296

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.201	5.121	5.136	5.467	5.143	4.994	5.166	5.011
S.D.	0.017	0.007	0.009	0.041	0.004	0.009	0.016	0.019
% R.S.D.	0.319	0.138	0.168	0.750	0.080	0.184	0.306	0.376

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	5.068	5.195	5.020	5.095	4.915	5.049	5.094	5.032
S.D.	0.006	0.035	0.006	0.014	0.011	0.010	0.006	0.042
% R.S.D.	0.128	0.670	0.118	0.276	0.232	0.208	0.110	0.834

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	5.027	4.851	5.123	5.173	4.783
S.D.	0.010	0.045	0.011	0.007	0.017
% R.S.D.	0.196	0.938	0.209	0.127	0.353

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Identity 1: CCB Identity 2: Quality Control 9:48 PM October 15, 1996

Task name : OPTIMA

Sample Weight : 1.0000 Solution Volume : 1.00

On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.004	0.001	0.001	-0.008	0.006	0.001	0.000	0.000
S.D.	0.001	0.000	0.005	0.003	0.006	0.002	0.000	0.000
% R.S.D.	33.418	28.868	830.280	31.943	97.992	180.598	105.365	81.128

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.001	-0.003	-0.004	0.002	0.002	0.002	0.017	-0.163
S.D.	0.000	0.001	0.001	0.002	0.000	0.001	0.003	0.042
% R.S.D.	15.338	18.724	37.484	106.878	3.798	37.960	14.454	26.053

	Ce (ppm)	Sn (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.025	-0.013	0.001	-0.022	-0.007	0.001	0.005	0.009
S.D.	0.013	0.008	0.000	0.002	0.001	0.000	0.004	0.004
% R.S.D.	53.332	59.336	26.064	11.334	10.034	11.549	74.275	38.191

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.001	0.001	0.002	0.011	-0.001	0.001	0.004	0.179
S.D.	0.001	0.012	0.000	0.001	0.000	0.000	0.001	0.009
% R.S.D.	74.992	2258.174	22.137	5.517	44.123	43.046	18.832	4.960

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Ti (ppm)
Mean	-0.001	0.013	0.002	0.001	0.026
S.D.	0.000	0.016	0.000	0.000	0.016
% R.S.D.	19.850	122.847	8.139	30.789	59.302

LABCORE Completed Worklist Report for Worklist# 13494

Analyst: smf

Instrument: CARB2

Book# ~~TIC~~ 22A12F
~~TDC~~ 24A12F

Method: LA-342-100 Rev/Mod E-0

Worklist Comment: C-104. Solid. @TICTOC

RTS!

B-109 Sample BBJ 12/15/96

Seq Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0			@TICTOC1 TIC-02	SOLID	1	2.70E+0	2.700	ug/g
1 BLNK	0			@TICTOC1 TOC-02	SOLID	1	1.70E+0	1.700	ug/g
2 STD	0			@TICTOC1 TIC-02	SOLID	6.02E+02	5.75E+2	95.515 %	Recovery
2 STD	0			@TICTOC1 TOC-02	SOLID	3.00E+03	2.64E+3	88.000 %	Recovery
3 SAMPLE	S96T005112	0		@TICTOC1 TIC-02	SOLID	N/A	2.51E+03	5.000	ug/g
3 SAMPLE	S96T005112	0		@TICTOC1 TOC-02	SOLID	N/A	5.36E+03	40.000	ug/g
4 DUP	S96T005112	0		@TICTOC1 TIC-02	SOLID	2.51E+3	2.43E+3	3.239	RPD
4 DUP	S96T005112	0		@TICTOC1 TOC-02	SOLID	5.36E+3	3.12E+3	52.830	RPD
5 TRIPL	S96T005112	0		@TICTOC1 TIC-02	SOLID	2.51E+3	1.94E+3	25.618	RPD
5 TRIPL	S96T005112	0		@TICTOC1 TOC-02	SOLID	5.36E+3	7.00E+3	26.537	RPD
6 SPK	S96T005112	0		@TICTOC1 TIC-02	SOLID	1.00E+02	1.06E+02	106.000 %	Recovery
6 SPK	S96T005112	0		@TICTOC1 TOC-02	SOLID	1.00E+02	1.17E+02	117.000 %	Recovery

Final page for worklist# 13494

see attached
Analyst Signature _____ Date _____

RLB 12/18/96
Analyst Signature _____ Date _____

R. J. Schuch 12/19/96
Reviewer Signature _____ Date _____

TIC/TOC: LA-342-100 (E-0)

WORKLIST	ANALYST INITIALS	ANALYSIS DATE	ANALYSIS TIME	INSTRUMENT CODE
1 2494	RME	12-15-96	1800	

☒ BASELINE BLANK ☐ SAMPLE DUPLICATE ☐ SPIKE TRIPLICATE

SAMPLE # = BASE1 STD # =

AMPLE WEIGHT (g) _____

STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

COULOMETER READING (u TIC: 8.1 TOC: 9.90

☐ BASELINE BLANK ☐ SAMPLE DUPLICATE ☐ SPIKE TRIPLICATE

SAMPLE # = STD1 STD # = TIC-22N14-F TOC-24N14-F

AMPLE WEIGHT (g) _____

STANDARD VOLUME (mL) _____ TIC: 1.000 TOC: 1.000

COULOMETER READING (u TIC: 538.2 TOC: 538.2 12/15/96

☐ BASELINE BLANK ☐ SAMPLE DUPLICATE ☐ SPIKE TRIPLICATE

SAMPLE # = BLK1 STD # =

AMPLE WEIGHT (g) _____

STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

COULOMETER READING (u TIC: 5.4 TOC: 11.6

☐ BASELINE BLANK ☒ SAMPLE DUPLICATE ☐ SPIKE TRIPLICATE

SAMPLE # = 596T005124 STD # =

AMPLE WEIGHT (g) 0.954

STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

COULOMETER READING (u TIC: 43.3 TOC: 47.60

☐ BASELINE BLANK ☒ SAMPLE DUPLICATE ☐ SPIKE TRIPLICATE

SAMPLE # = 596T005112 STD # =

AMPLE WEIGHT (g) 1.3096

STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: 337.1 TOC: 711.3

☐ BASELINE BLANK ☒ SAMPLE DUPLICATE ☐ SPIKE TRIPLICATE

SAMPLE # = 596T005112DUP STD # =

AMPLE WEIGHT (g) 1.5069

STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: 493.1 TOC: 493.1 370.2

☐ BASELINE BLANK ☒ SAMPLE DUPLICATE ☒ SPIKE TRIPLICATE

SAMPLE # = 596T005112TRP STD # =

AMPLE WEIGHT (g) 0.854

STANDARD VOLUME (mL) _____ TIC: _____ TOC: _____

FINAL COULOMETER READING (u TIC: 170.0 TOC: 621.6

☐ BASELINE BLANK ☒ SAMPLE DUPLICATE ☒ SPIKE TRIPLICATE

SAMPLE # = 596T005112SPK STD # = TIC-22N12F TOC-24N12F

AMPLE WEIGHT (g) 0.8819

STANDARD VOLUME (mL) _____ TIC: 500 TOC: 100

FINAL COULOMETER READING (u TIC: 56.54 TOC: 829.1

Dec 17 1996 1:37PM WHC 22S LAB ROOM 2F BACKSIDE

HALE
WHC-SD-MM-DP-201, REV. 1

LABCORE Data Entry Template for Worklist# 13494

Analyst: smf Instrument: CARB2

Book# TIC 22N12F
TOC 24N12F

Method: LA-342-100 Rev/Mod E-3

Worklist Comment: C-104. Solid. @TICTOC.

RTS!

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	SOLID		
2 STD			@TICTOC1	SOLID		
3 SAMPLE	S96T005112 0		@TICTOC1	SOLID	96001237	B-109
	Analytes Requested: TIC-02 , TOC-02					
4 DUP	S96T005112 0		@TICTOC1	SOLID		
5 TRIPL	S96T005112 0		@TICTOC1	SOLID		
6 SPK	S96T005112 0		@TICTOC1	SOLID		

R. H. H. for 12-18-96 **Final page for worklist # 13494**

Susie m Fulton 12-14-96
Analyst Signature Date

R. H. H. 12-18-96
Analyst Signature Date

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

~~WHC-SD-WM-DP-201, REV. 1~~

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE1

Date: 12/15/96

Time: 10:45:05

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASE1

Blank Value = N/A

Analyst : SM FULTON

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.00	60.00
3	1.51	1.70	41.18
4	2.01	2.40	29.17
5	2.50	2.60	7.69
6	3.00	3.00	13.33
7	3.50	3.50	14.29
8	4.00	3.90	10.26
9	4.50	4.30	9.30
10	5.00	4.60	6.52
11	5.50	5.00	8.00
12	6.00	5.40	7.41
13	6.50	5.60	3.57
14	7.00	5.90	5.08
15	7.50	6.30	6.35
16	8.00	6.50	3.08
17	8.50	6.80	4.41
18	9.00	7.00	2.86
19	9.50	7.40	5.41
20	10.00	7.80	5.13
21	10.50	7.80	0.00
22	11.00	8.10	3.70

BLANK VALUE = 8.1 micrograms carbon

BLANK FACTOR = 8.1 / 10.99878 =

+7.4E-01

ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 184 TO 202

12/19/96

Sample Run By:

SM FULTON

R.W. Schwedch for SM Fulton

XOXOX

~~WHC~~ SD-WM-DP-201, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE1

Date: 12/15/96

Time: 10:58:55

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE1
Blank Value = N/A

Analyst : SM FULTON
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.00	0.00
2	1.01	0.10	100.00
3	1.50	0.70	85.71
4	2.00	1.70	58.82
5	2.50	2.70	37.04
6	3.00	3.60	25.00
7	3.50	4.30	16.28
8	4.00	4.80	10.42
9	4.50	5.20	7.69
10	5.00	5.80	10.34
11	5.50	6.20	6.45
12	6.00	6.60	6.06
13	6.50	7.00	5.71
14	7.00	7.60	7.89
15	7.50	7.80	2.56
16	8.00	8.10	3.70
17	8.50	8.50	4.71
18	9.00	8.80	3.41
19	9.50	9.00	2.22
20	10.00	9.40	4.26
21	10.50	9.70	3.09
22	11.00	9.90	2.02

BLANK VALUE = 9.9 micrograms carbon

BLANK FACTOR = $9.9 / 11.00061 =$

+9.0E-01 ug/min Carbon

Sample Run By:

SM FULTON

XOXOX

WHC-SD-WM-DP-201, REV. 1

HNF

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK1

Date: 12/15/96

Time: 13:40:44

Sample Size = 1 uL

Analyst : SM FULTON

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .74 ug/minute C

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.00	0.00
2	1.01	0.50	100.00
3	1.50	1.80	72.22
4	2.00	2.60	30.77
5	2.50	3.10	16.13
6	3.00	3.30	6.06
7	3.50	3.50	5.71
8	4.00	3.70	5.41
9	4.50	3.70	0.00
10	5.00	4.00	7.50
11	5.50	4.10	2.44
12	6.00	4.20	2.38
13	6.50	4.30	2.33
14	7.00	4.40	2.27
15	7.50	4.60	4.35
16	8.00	4.70	2.13
17	8.50	4.90	4.08
18	9.00	5.00	2.00
19	9.50	5.10	1.96
20	10.00	5.20	1.92
21	10.50	5.30	1.89
22	11.00	5.40	1.85

USER INPUT BLANK VALUE

BLANK VALUE = 8.140451 micrograms carbon

BLANK FACTOR = 8.140451 / 11.00061 = +7.4E-01 ug/min Carbon

SAMPLE RESULTS:

(5.4 - 8.139865) (1)/(1) = < 5.00 E-3 g/L Carbon
 (5.4 - 8.139865) (1)/(1) (12) = < 4.17 E-4 Molar Carbon

Sample Run By:

SM FULTON

XOXOX

WHC-SD-WM-DP-201, REV. 1

HNP
 TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0

Sample: BLK1

Date: 12/15/96

Time: 13:52:57

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .9 ug/minute C

Analyst : SM FULTON

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.00	0.00
2	1.01	0.20	100.00
3	1.51	4.40	95.45
4	2.01	6.80	35.29
5	2.51	7.90	13.92
6	3.01	8.40	5.95
7	3.51	8.80	4.55
8	4.01	9.10	3.30
9	4.50	9.60	5.21
10	5.00	9.60	0.00
11	5.50	9.90	3.03
12	6.00	10.10	1.98
13	6.50	10.30	1.94
14	7.00	10.50	1.90
15	7.50	10.70	1.87
16	8.00	10.90	1.83
17	8.50	11.00	0.91
18	9.00	11.20	1.79
19	9.50	11.30	0.88
20	10.00	11.40	0.88
21	10.50	11.50	0.87
22	11.00	11.60	0.86

USER INPUT BLANK VALUE

BLANK VALUE = 9.900549 micrograms carbon

BLANK FACTOR = 9.900549 / 11.00061 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(11.6 - 9.901538) (1)/(1)	=	+1.70E+00	g/L Carbon
(11.6 - 9.901538) (1)/(1) (12)	=	+1.42E-01	Molar Carbon

Sample Run By:

SM FULTON

XOXOX

WHC-SD-WM-DP-201, REV. 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD1

Date: 12/15/96

Time: 11:49:43

Sample Size = 1000 uL

Analyst : SM FULTON

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .74 ug/minute C

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.30	0.00
2	1.01	16.10	98.14
3	1.50	150.40	89.30
4	2.00	311.60	51.73
5	2.50	438.00	28.86
6	3.00	509.10	13.97
7	3.50	542.00	6.07
8	4.00	554.60	2.27
9	4.50	561.10	1.16
10	5.00	564.90	0.67
11	5.50	567.50	0.46
12	6.00	569.70	0.39
13	6.50	571.60	0.33
14	7.00	573.10	0.26
15	7.50	574.80	0.30
16	8.00	576.00	0.21
17	8.50	577.40	0.24
18	9.00	578.50	0.19
19	9.50	579.90	0.24
20	10.00	580.70	0.14
21	10.50	581.90	0.21
22	11.00	582.80	0.15

USER INPUT BLANK VALUE

BLANK VALUE = 8.140451 micrograms carbon

BLANK FACTOR = 8.140451 / 11.00061 = +7.4E-01 ug/min Carbon

SAMPLE RESULTS:

(582.8 - 8.140497) (1)/(1000) = +5.747E-01 g/L Carbon
 (582.8 - 8.140497) (1)/(1000) (12) = +4.789E-02 Molar Carbon

Sample Run By:

SM FULTON

XOXOX

WHC-SD-WM-DP-201, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD1

Date: 12/15/96

Time: 13:24:10

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = .9 ug/minute C

Analyst : SM FULTON

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.80	0.00
2	1.01	33.00	97.58
3	1.51	284.80	88.41
4	2.01	452.00	36.99
5	2.51	496.50	8.96
6	3.01	509.80	2.61
7	3.51	516.30	1.26
8	4.00	519.60	0.64
9	4.50	521.90	0.44
10	5.00	524.10	0.42
11	5.50	525.80	0.32
12	6.00	527.50	0.32
13	6.50	528.90	0.26
14	7.00	530.30	0.26
15	7.50	531.40	0.21
16	8.00	532.70	0.24
17	8.50	533.90	0.22
18	9.00	534.50	0.11
19	9.50	535.50	0.19
20	10.00	536.40	0.17
21	10.50	537.30	0.17
22	11.00	538.20	0.17

USER INPUT BLANK VALUE

BLANK VALUE = 9.900549 micrograms carbon

BLANK FACTOR = 9.900549 / 11.00061 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(538.2 - 9.899835) (1)/(200) =

+2.642E+00 g/L Carbon

(538.2 - 9.899835) (1)/(200) (12) =

+2.201E-01 Molar Carbon

Sample Run By:

SM FULTON

XOXOX

Dec. 17, 1996

1:46PM

WHC 222S LAB ROOM 2E BACKSIDE

No. 8110 P. 21/27

WHC-SD-WM-DP-201, REV. 1

HNF

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005112

Date: 12/15/96

Time: 14:06:14

Sample Size = 1 uL, 1309g

Dil Factor = 1

Blank ID # =

Blank Value = .74 ug/minute C

Analyst : SM FULTON

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading == Analysis Time == Coulometer == % Difference ==

1	0.51	0.00	0.00
2	1.01	1.30	100.00
3	1.51	34.30	96.21
4	2.00	104.50	67.18
5	2.50	180.60	42.14
6	3.00	237.20	23.86
7	3.50	272.20	12.86
8	4.00	289.90	6.11
9	4.50	298.90	3.01
10	5.00	303.90	1.65
11	5.50	308.10	1.36
12	6.00	311.60	1.12
13	6.50	314.50	0.92
14	7.00	317.30	0.88
15	7.50	320.30	0.94
16	8.00	322.90	0.81
17	8.50	325.30	0.74
18	9.00	328.20	0.88
19	9.50	330.30	0.64
20	10.00	332.70	0.72
21	10.50	335.10	0.72
22	11.00	337.10	0.59

USER INPUT BLANK VALUE

BLANK VALUE = 8.140451 micrograms carbon

BLANK FACTOR = 8.140451 / 11.00061 = +7.4E-01 ug/min Carbon

SAMPLE RESULTS:

(337.1 - 8.139774) (1)/(1) = +3.290E+02 g/L Carbon
 (337.1 - 8.139774) (1)/(1) (12) = +2.741E+01 Molar Carbon

Sample Run By:

SM FULTON

XOXOX

WHC-SD-WM-DP-201, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005112

Date: 12/15/96

Time: 14:19:08

Sample Size = 1 uL *1100 ug*

Dil Factor = 1

Blank ID # =

Blank Value = .9 ug/minute C

Analyst : SM FULTON

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	2.30	0.00
2	1.00	109.10	97.89
3	1.50	466.50	76.61
4	2.00	604.70	22.85
5	2.50	644.60	6.19
6	3.00	663.40	2.83
7	3.50	674.20	1.60
8	4.00	681.90	1.13
9	4.50	687.30	0.79
10	5.00	691.50	0.61
11	5.50	695.20	0.53
12	6.00	697.90	0.39
13	6.50	700.30	0.34
14	7.00	702.40	0.30
15	7.50	703.90	0.21
16	8.00	705.30	0.20
17	8.50	706.40	0.16
18	9.00	707.60	0.17
19	9.50	708.50	0.13
20	10.00	709.50	0.14
21	10.50	710.50	0.14
22	11.00	711.30	0.11

USER INPUT BLANK VALUE

BLANK VALUE = 9.900549 micrograms carbon

BLANK FACTOR = 9.900549 / 11.00061 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(711.3 - 9.899671) (1)/(1) = +7.014E+02 g/L Carbon
 (711.3 - 9.899671) (1)/(1) (12) = +5.845E+01 Molar Carbon

Sample Run By:

SM FULTON

XOXOX

HNF
 WHG-SD-WM-DP-201, REV. 1
 TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0

Sample: S96T005112DUP Date: 12/15/96 Time: 14:50:58

Sample Size = 1 uL *.1506 g* Analyst : SM FULTON
 Dil Factor = 1 Min Readings = 22
 Blank ID # = Max Readings = 22
 Blank Value = .74 ug/minute C % Difference = 10

== Reading	==== Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		0.50	0.00
2	1.01		2.90	82.76
3	1.51		38.70	92.51
4	2.00		121.80	68.23
5	2.51		213.40	42.92
6	3.01		277.80	23.18
7	3.50		310.90	10.65
8	4.00		325.30	4.43
9	4.50		332.70	2.22
10	5.00		337.20	1.33
11	5.50		341.00	1.11
12	6.00		344.10	0.90
13	6.50		347.30	0.92
14	7.00		350.10	0.80
15	7.50		352.80	0.77
16	8.00		355.60	0.79
17	8.50		358.30	0.75
18	9.00		361.10	0.78
19	9.50		363.80	0.74
20	10.00		365.80	0.55
21	10.50		368.00	0.60
22	11.00		370.20	0.59

USER INPUT BLANK VALUE

BLANK VALUE = 8.140451 micrograms carbon

BLANK FACTOR = 8.140451 / 11.00061 = +7.4E-01 ug/min Carbon

SAMPLE RESULTS:

(370.2 - 8.140451) (1)/(1) = +3.621E+02 g/L Carbon
 (370.2 - 8.140451) (1)/(1) (12) = +3.017E+01 Molar Carbon

Sample Run By:

SM FULTON

XOXOX

~~WHE~~

WHG-SD-WM-DP-201, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005112DUP Date: 12/15/96 Time: 16:23:13

Sample Size = 1 uL *1506g*
Dil Factor = 1
Blank ID # =
Blank Value = .9 ug/minute C

Analyst : SM FULTON
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.70	0.00
2	1.01	79.90	97.87
3	1.51	297.40	73.13
4	2.00	392.30	24.19
5	2.50	426.00	7.91
6	3.00	442.40	3.71
7	3.50	452.80	2.30
8	4.00	461.40	1.86
9	4.50	468.50	1.52
10	5.00	472.90	0.93
11	5.50	477.40	0.94
12	6.00	480.10	0.56
13	6.50	483.20	0.64
14	7.00	485.10	0.39
15	7.50	487.10	0.41
16	8.00	488.90	0.37
17	8.50	490.10	0.24
18	9.00	491.20	0.22
19	9.50	491.70	0.10
20	10.00	492.30	0.12
21	10.50	492.70	0.08
22	11.00	493.10	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 9.900549 micrograms carbon

BLANK FACTOR = 9.900549 / 11.00061 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(493.1 - 9.898956) (1)/(1) = +4.832E+02 g/L Carbon
(493.1 - 9.898956) (1)/(1) (12) = +4.027E+01 Molar Carbon

Sample Run By:

SM FULTON

X0X0X

WHE
WHC-SD-WM-DP-201, REV. 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005112TRP Date: 12/15/96 Time: 16:40:00

Sample Size = 1 uL .0854g
Dil Factor = 1
Blank ID # =
Blank Value = .74 ug/minute C

Analyst : SM FULTON
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	1.30	100.00
3	1.51	20.90	93.78
4	2.00	59.90	65.11
5	2.50	99.90	40.04
6	3.00	128.00	21.95
7	3.50	141.80	9.73
8	4.00	147.60	3.93
9	4.50	151.40	2.51
10	5.00	154.00	1.69
11	5.50	155.70	1.09
12	6.00	157.70	1.27
13	6.50	159.30	1.00
14	7.00	160.90	0.99
15	7.50	162.50	0.98
16	8.00	163.90	0.85
17	8.50	165.10	0.73
18	9.00	166.40	0.78
19	9.50	167.10	0.42
20	10.00	168.10	0.59
21	10.50	169.20	0.65
22	11.00	170.00	0.47

USER INPUT BLANK VALUE

BLANK VALUE = 8.140451 micrograms carbon

BLANK FACTOR = 8.140451 / 11.00061 = +7.4E-01 ug/min Carbon

SAMPLE RESULTS:

(170 - 8.140451) (1) / (1) = +1.619E+02 g/L Carbon
(170 - 8.140451) (1) / (1) (12) = +1.349E+01 Molar Carbon

Sample Run By:

SM FULTON

XOXOX

~~WHC~~
~~WHC~~ SD-WM-DP-201, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
 TIC/TOC REV 2.0

Sample: S96T005112TRP

Date: 12/15/96

Time: 16:51:53

Sample Size = 1 uL, *1854g*
 Dil Factor = 1
 Blank ID # =
 Blank Value = .9 ug/minute C

Analyst : SM FULTON
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		0.50	0.00
2	1.01		76.40	99.35
3	1.51		376.30	79.70
4	2.01		514.30	26.83
5	2.51		557.40	7.73
6	3.00		578.10	3.58
7	3.50		590.60	2.12
8	4.00		597.80	1.20
9	4.50		603.00	0.86
10	5.00		606.70	0.61
11	5.50		610.00	0.54
12	6.00		612.70	0.44
13	6.50		614.60	0.31
14	7.00		616.50	0.31
15	7.50		617.70	0.19
16	8.00		618.60	0.15
17	8.50		619.50	0.15
18	9.00		620.00	0.08
19	9.50		620.70	0.11
20	10.00		621.00	0.05
21	10.50		621.40	0.06
22	11.00		621.60	0.03

USER INPUT BLANK VALUE

BLANK VALUE = 9.900549 micrograms carbon

BLANK FACTOR = 9.900549 / 11.00061 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(621.6 - 9.898791) (1)/(1) = +6.117E+02 g/L Carbon
 (621.6 - 9.898791) (1)/(1)(12) = +5.098E+01 Molar Carbon

Sample Run By:

SM FULTON

X0X0X

WHC SD-WM-DP-201, REV. 1
HNFTIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005112SPK

Date: 12/15/96

Time: 17:07:22

Sample Size = 1 uL *0.881g*
Dil Factor = 1
Blank ID # =
Blank Value = .74 ug/minute CAnalyst : SM FULTON
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.00	0.00
2	1.01	1.90	100.00
3	1.51	53.70	96.46
4	2.00	175.60	69.42
5	2.50	313.10	43.92
6	3.00	420.10	25.47
7	3.51	480.40	12.55
8	4.01	509.60	5.73
9	4.50	520.90	2.17
10	5.00	526.00	0.97
11	5.50	529.30	0.62
12	6.00	531.40	0.40
13	6.50	533.30	0.36
14	7.00	535.20	0.36
15	7.50	537.10	0.35
16	8.00	538.70	0.30
17	8.50	540.30	0.30
18	9.00	541.60	0.24
19	9.50	542.60	0.18
20	10.00	543.80	0.22
21	10.50	544.80	0.18
22	11.00	546.00	0.22

USER INPUT BLANK VALUE

BLANK VALUE = 8.140451 micrograms carbon

BLANK FACTOR = 8.140451 / 11.00061 = +7.4E-01 ug/min Carbon

SAMPLE RESULTS:

(546 - 8.140451) (1)/(1)	=	+5.379E+02	g/L Carbon
(546 - 8.140451) (1)/(1) (12)	=	+4.482E+01	Molar Carbon

Sample Run By:

SM FULTON

XOXOX

WHC-SD-WM-DP-201, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005112SPK Date: 12/15/96 Time: 17:20:21

Sample Size = 1 uL *0.0001g*
Dil Factor = 1
Blank ID # =
Blank Value = .9 ug/minute CAnalyst : SM FULTON
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.30	0.00
2	1.01	83.30	99.64
3	1.51	490.90	83.03
4	2.01	699.30	29.80
5	2.50	754.40	7.30
6	3.00	776.00	2.78
7	3.50	788.20	1.55
8	4.00	796.60	1.05
9	4.50	802.80	0.77
10	5.00	807.70	0.61
11	5.50	811.80	0.51
12	6.00	814.80	0.37
13	6.50	817.50	0.33
14	7.00	819.60	0.26
15	7.50	821.40	0.22
16	8.00	823.10	0.21
17	8.50	824.50	0.17
18	9.00	825.80	0.16
19	9.50	827.20	0.17
20	10.00	827.90	0.08
21	10.50	828.60	0.08
22	11.00	829.10	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 9.900549 micrograms carbon

BLANK FACTOR = 9.900549 / 11.00061 = +9.0E-01 ug/min Carbon

SAMPLE RESULTS:

(829.1 - 9.900549) (1)/(1) = +8.192E+02 g/L Carbon
 (829.1 - 9.900549) (1)/(1) (12) = +6.827E+01 Molar Carbon

Sample Run By:

SM FULTON

XOXOX

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Sample Size in g	(SS)	0.0000	0.0000
Dilution Factor	(DF)	1	1
µg of Carbon in Sample	(C1)	5.4	11.6
µg of Carbon from Baseline	(C2)	8.1	9.9

@TICTOC1

SOLID

96009966

0

N/A

BLNK

CARB2

RTS

RWS

SMF

12/18/96

12/14/96

µg of Carbon = |C1-C2|

Method Detection Limit in ug/g

µg of Carbon

TIC

TOC

5

40

2.70E+00

1.70E+00

Data Entered By:
Signature of Chemist:

RTS

Date: 12/18/96
Date: 12/19/96

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

			TIC	TOC
Sample Size in mL	(SS)		1.0000	0.2000
Dilution Factor	(DF)		1	1
Final Coulometer Reading in µg	(C1)		582.8	538.2
µg of Carbon from Baseline	(C2)		8.1	9.9
Standard Book Number			22N12F	24N12F
Standard Value (µg/ml)			602	3000

LIQUID
96009966
0
N/A
STD
CARB2
RTS
RWS
SMF
12/18/96
12/14/96
C-104

QC Actual in µg/mL = Standard Value (µg/mL)

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

TIC	TOC
5	40
6.02E+02	3.00E+03
5.75E+02	2.64E+03
95.5	88.1

Data Entered By:	RJS	Date:	12/18/96
Signature of Chemist:	<i>RJS</i>	Date:	12/19/96

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.1309	0.1309
SAMPLE	Dilution Factor (DF)	1	1
Weight	µg of Carbon in Sample (C1)	337.1	711.3
13494	µg of Carbon from Baseline (C2)	8.1	9.9
@TICTOC1			
SOLID			
Batch Number			
96009966			
Regrin	µg of Carbon/g = (C1-C2) * DF / SS		
0	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Rep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample No			
S96T005112			
CARB2			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SMF			
Date			
12/18/96			
Date			
12/14/96			
Analysis Limit	Method Detection Limit in ug/g	TIC	TOC
		5	40
Sample Total	µg of Carbon/g	2.51E+03	5.36E+03
C-104			

Data Entered By:	RTS	Date: 12/18/96
Signature of Chemist:	<i>Tzu Schneidh</i>	Date: 12/19/96

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Wtts	Sample Size in g (SS)	0.1506	0.1506
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	370.2	493.1
13494	µg of Carbon from Baseline (C2)	4.5	23.5
Test Comp	Known µg of C from Original Sample	2.51E+03	5.36E+03
@TICTOC1			
Matrix			
SOLID			
Batch Number			
96009966			
Return			
0			
Sample Prep			
N/A			
Sample #			
S96T005112			
Instrument Code			
CARB2			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SMF			
Date Sampled			
12/18/96			
Analysis Date			
12/14/96			
Analysis Limit	Method Detection Limit in ug/g	5	40
Sample Point	µg of Carbon/g	2.43E+03	3.12E+03
C-104			

µg of Carbon/g = (C1-C2) * DF / SS
 µg of Carbon/g for TIC = 5 if C1 < C2
 µg of Carbon/g for TOC = 40 if C1 < C2

Data Entered By:	RTS	Date:	12/18/96
Signature of Chemist:	<i>[Signature]</i>	Date:	12/19/96

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: TRIPL5

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Sample Size in g	(SS)	0.0854	0.0854
Dilution Factor	(DF)	1	1
µg of Carbon in Sample	(C1)	170	621.6
µg of Carbon from Baseline	(C2)	4.5	23.5
Known µg of C from Original Sample		2.51E+03	5.36E+03
Duplicate Result		2.43E+03	3.12E+03

Matrix
SOLID
Batch Number
96009966
Rerun
0
Sample Prep
N/A
Sample #
S96T005112
Instrument Code
CARB2
Prepared By
RTS
Chemist
RWS
Analyte
SMF
Date Complete
12/18/96
Analysis Date
12/14/96
Analysis Date
Method Detection Limit in ug/g
µg of Carbon/g
C-104

µg of Carbon/g = (C1-C2) * DF / SS
 µg of Carbon/g for TIC = 5 if C1 < C2
 µg of Carbon/g for TOC = 40 if C1 < C2

TIC	TOC
5	40
1.94E+03	7.00E+03

Data Entered By:

RTS

Date: 12/18/96

Signature of Chemist:

RWS

Date: 12/19/96

WORKBOOK PAGE: SPIKE6

TIC/TOC : LA-342-100 (E-0)

SOLIDS

Type	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.1309	0.1309
Work List	Final Coulometer Reading in µg (C1)	337.1	711.3
13494	Spiked Vial Data		
Test Code	Sample Size in g (SPK SS)	0.0881	0.0881
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
Mass	Final Coulometer Reading in µg (C2)	546	829.1
SOLID	Spike Book Number	22N12F	24N12F
Balance Number	Spike Standard Value in µg/mL (SPK CONC)	602	3000
96009966			
Rerun			
0			
Sample Prep			
N/A			
Sample #	Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100$		
S96T005112			
Instrument Code	QC Actual in µg/mL = Spike Value (µg/mL)		
CARB2	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SMF			
Date Complete			
12/18/96			
Analysis Date			
12/14/96			
Analysis Time			
		TIC	TOC
	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	6.38E+02	3.50E+03
C-104	Percent Spike Recovery	106.0	116.8

see 1/1/97

Data Entered By:	RTS	Date: 12/18/96
Signature of Chemist:	<i>RTS</i>	Date: 12/19/96

SPIKE.WB1 REV 1.1

342100ML

LABCORE Completed Worklist Report for Worklist# 13806

Analyst: krm

Instrument: CARB2

Book# _____

Method: LA 342-100Rev/Mod E-O

Worklist Comment: B-109 TICTOC, RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK		0	@TICTOC1 TIC-02	LIQUID	1	1.90E+0	1.900	ug/mL
1 BLNK		0	@TICTOC1 TOC-02	LIQUID	1	3.60E+0	3.600	ug/mL
2 STD		0	@TICTOC1 TIC-02	LIQUID	6.02E+02	5.61E+2	93.189 % Recovery	
2 STD		0	@TICTOC1 TOC-02	LIQUID	3.00E+03	2.70E+3	90.000 % Recovery	
3 SAMPLE	S96T005116	0	@TICTOC1 TIC-02	LIQUID	N/A	1.22E+01	5.000	ug/mL
3 SAMPLE	S96T005116	0	@TICTOC1 TOC-02	LIQUID	N/A	4.00E+01	40.000	ug/mL
4 DUP	S96T005116	0	@TICTOC1 TIC-02	LIQUID	1.22E+1	1.16E+1	5.042	RPD
4 DUP	S96T005116	0	@TICTOC1 TOC-02	LIQUID	<4.00E+1	<4.00E+1		RPD
5 SPK	S96T005116	0	@TICTOC1 TIC-02	LIQUID	1.00E+02	9.83E+01	98.300 % Recovery	
5 SPK	S96T005116	0	@TICTOC1 TOC-02	LIQUID	1.00E+02	9.09E+01	90.900 % Recovery	

Final page for worklist# 13806

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Realt W. Schneider 12/16/96
Reviewer Signature Date

10/09/96 13:05
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 13806

Analyst: KRM Instrument: CARB2 Book# _____

Method: LA-342-100 Rev/Mod _____

Worklist Comment: B-109 TICTOC. RCJ

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	LIQUID		
2	STD				@TICTOC1	LIQUID		
3	SAMPLE	S96T005116 0			@TICTOC1	LIQUID	96001238	B-109
		Analytes Requested: TIC-02 , TOC-02						
4	DUP	S96T005116 0			@TICTOC1	LIQUID		
5	SPK	S96T005116 0			@TICTOC1	LIQUID		

Final page for worklist # 13806

Analyst Signature Date

12-14-96

Analyst Signature Date

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code 205

WORKLIST

TIC/TOC: LA-342-100 (E-0)

ANALYST

INITIALS

ANALYSIS

DATE

ANALYSIS

TIME

INSTRUMENT

CODE

13806

KRM

12-13-96

☒ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

9.0

TOC:

12.2

☒ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

3.1

TOC:

15.8

☐ BASELINE
BLANK☒ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

16.6

TOC:

23.2

☐ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

TOC:

☐ BASELINE
BLANK☒ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # = 57D

STD # =

22N12F
24N12F

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

566.0

TOC:

551.3

☐ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # = 396T 5116

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

17.2

TOC:

18.6

☐ BASELINE
BLANK☐ SAMPLE
DUPLICATE☒ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

22N12F
24N12F

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

313.2

TOC:

291.4

☐ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

TOC:

WHE-SD-WM-DP-201, REV. 1

Dec 13 1996

5:06PM

WHE 222S LAB ROOM 2F BACKSIDE

No. 7997 P. 2/14

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BASE1

Date: 12/13/96

Time: 10:43:19

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE1
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.01	0.40	75.00
3	1.51	0.60	33.33
4	2.00	0.90	33.33
5	2.50	1.10	18.18
6	3.00	1.30	15.38
7	3.50	1.60	18.75
8	4.00	2.00	20.00
9	4.50	2.20	9.09
10	5.00	2.50	12.00
11	5.50	2.80	10.71
12	6.00	3.00	6.67
13	6.50	3.20	6.25
14	7.00	3.40	5.88
15	7.50	3.70	8.11
16	8.00	3.80	2.63
17	8.50	4.00	5.00
18	9.00	4.30	6.98
19	9.50	4.50	4.44
20	10.00	4.60	2.17
21	10.50	4.80	4.17
22	11.00	5.00	4.00

BLANK VALUE = 5 micrograms carbon

BLANK FACTOR = 5 / 10.9978 =

+4.5E-01 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 207 TO 223

Sample Run By:

RW Schuch for KR Monteith
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BASE1

Date: 12/13/96

Time: 11:13:38

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE1
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.30	100.00
3	1.50	0.70	57.14
4	2.00	1.60	56.25
5	2.50	3.00	46.67
6	3.00	4.30	30.23
7	3.50	5.40	20.37
8	4.00	6.10	11.48
9	4.50	6.80	10.29
10	5.00	7.50	9.33
11	5.50	7.90	5.06
12	6.00	8.50	7.06
13	6.50	9.00	5.56
14	7.00	9.40	4.26
15	7.50	9.80	4.08
16	8.00	10.20	3.92
17	8.50	10.70	4.67
18	9.00	10.90	1.83
19	9.50	11.30	3.54
20	10.00	11.60	2.59
21	10.50	11.90	2.52
22	11.00	12.20	2.46

BLANK VALUE = 12.2 micrograms carbon

BLANK FACTOR = 12.2 / 10.99969 = +1.11E+00 ug/min Carbon

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD1

Date: 12/13/96

Time: 11:30:05

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = .45 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.20	100.00
3	1.51	35.10	99.43
4	2.01	233.90	84.99
5	2.51	419.60	44.26
6	3.01	498.50	15.83
7	3.51	527.40	5.48
8	4.01	538.80	2.12
9	4.50	544.50	1.05
10	5.00	548.10	0.66
11	5.50	551.00	0.53
12	6.00	553.20	0.40
13	6.50	555.10	0.34
14	7.00	556.70	0.29
15	7.50	558.50	0.32
16	8.00	559.80	0.23
17	8.50	561.00	0.21
18	9.00	562.10	0.20
19	9.50	563.20	0.20
20	10.00	564.30	0.19
21	10.50	565.20	0.16
22	11.00	566.00	0.14

USER INPUT BLANK VALUE

BLANK VALUE = 4.949862 micrograms carbon

BLANK FACTOR = 4.949862 / 10.99969 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(566 - 4.950769) (1)/(1000) = +5.610E-01 g/L Carbon
(566 - 4.950769) (1)/(1000) (12) = +4.675E-02 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD1

Date: 12/13/96

Time: 11:45:33

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.11 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	1.00	0.00
2	1.01	102.60	99.03
3	1.51	388.00	73.56
4	2.00	489.50	20.74
5	2.50	518.00	5.50
6	3.00	526.80	1.67
7	3.50	531.10	0.81
8	4.00	534.30	0.60
9	4.50	536.20	0.35
10	5.00	538.10	0.35
11	5.50	540.00	0.35
12	6.00	541.50	0.28
13	6.50	542.60	0.20
14	7.00	544.30	0.31
15	7.50	545.10	0.15
16	8.00	546.30	0.22
17	8.50	547.00	0.13
18	9.00	548.00	0.18
19	9.50	548.80	0.15
20	10.00	549.80	0.18
21	10.50	550.40	0.11
22	11.00	551.30	0.16

USER INPUT BLANK VALUE

BLANK VALUE = 12.20966 micrograms carbon

BLANK FACTOR = 12.20966 / 10.99969 = +1.1E+00 ug/min Carbon

SAMPLE RESULTS:

(551.3 - 12.20871) (1)/(200) = +2.695E+00 g/L Carbon
(551.3 - 12.20871) (1)/(200) (12) = +2.246E-01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

E

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK1

Date: 12/13/96

Time: 13:30:29

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .45 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1           0.51           0.00           0.00
  2           1.01           0.20          100.00
  3           1.51           0.50           60.00
  4           2.01           0.80           37.50
  5           2.51           1.00           20.00
  6           3.01           1.20          16.67
  7           3.51           1.30           7.69
  8           4.01           1.40           7.14
  9           4.50           1.60          12.50
 10           5.00           1.70           5.88
 11           5.50           1.80           5.56
 12           6.00           2.00          10.00
 13           6.50           2.10           4.76
 14           7.00           2.20           4.55
 15           7.50           2.30           4.35
 16           8.00           2.40           4.17
 17           8.50           2.60           7.69
 18           9.00           2.70           3.70
 19           9.50           2.70           0.00
 20          10.00           2.90           6.90
 21          10.50           3.00           3.33
 22          11.00           3.10           3.23
  
```

USER INPUT BLANK VALUE

BLANK VALUE = 4.949862 micrograms carbon

BLANK FACTOR = 4.949862 / 10.99969 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(3.1 - 4.951126) (1)/(1) = < 5.00 E-3 g/L Carbon
(3.1 - 4.951126) (1)/(1) (12) = < 4.17 E-4 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK1

Date: 12/13/96

Time: 13:42:32

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.11 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis	Time	==== Coulometer	==== % Difference
1	0.51		0.00	0.00
2	1.01		2.40	100.00
3	1.51		8.20	70.73
4	2.01		10.70	23.36
5	2.51		11.60	7.76
6	3.01		12.30	5.69
7	3.51		12.50	1.60
8	4.01		12.90	3.10
9	4.50		13.30	3.01
10	5.00		13.70	2.92
11	5.50		13.90	1.44
12	6.00		14.10	1.42
13	6.50		14.40	2.08
14	7.00		14.50	0.69
15	7.50		14.80	2.03
16	8.00		14.90	0.67
17	8.50		15.10	1.32
18	9.00		15.30	1.31
19	9.50		15.40	0.65
20	10.00		15.50	0.65
21	10.50		15.70	1.27
22	11.00		15.80	0.63

USER INPUT BLANK VALUE

BLANK VALUE = 12.20966 micrograms carbon

BLANK FACTOR = 12.20966 / 10.99969 = +1.1E+00 ug/min Carbon

SAMPLE RESULTS:

(15.8 - 12.21081) (1)/(1) = +3.59E+00 g/L Carbon
(15.8 - 12.21081) (1)/(1) (12) = +2.99E-01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T5116-1

Date: 12/13/96

Time: 14:46:10

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .45 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.00	0.00
2	1.01	1.50	100.00
3	1.51	5.90	74.58
4	2.00	10.40	43.27
5	2.50	13.20	21.21
6	3.00	14.50	8.97
7	3.50	15.00	3.33
8	4.00	15.20	1.32
9	4.50	15.40	1.30
10	5.00	15.60	1.28
11	5.50	15.70	0.64
12	6.00	15.80	0.63
13	6.50	16.00	1.25
14	7.00	16.10	0.62
15	7.50	16.30	1.23
16	8.00	16.40	0.61
17	8.50	16.60	1.20
18	9.00	16.70	0.60
19	9.50	16.80	0.60
20	10.00	16.90	0.59
21	10.50	17.10	1.17
22	11.00	17.20	0.58

USER INPUT BLANK VALUE

BLANK VALUE = 4.949862 micrograms carbon

BLANK FACTOR = 4.949862 / 10.99969 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(17.2 - 4.950686) (1)/(1) = +1.22E+01 g/L Carbon
(17.2 - 4.950686) (1)/(1)(12) = +1.02E+00 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T5116-1

Date: 12/13/96

Time: 16:12:46

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 1.11 ug/minute C

Analyst : KR MONTEITH

Min Readings = 22

Max Readings = 22

% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.20	0.00
2	1.01	5.20	96.15
3	1.51	10.80	51.85
4	2.00	13.40	19.40
5	2.50	14.60	8.22
6	3.00	15.10	3.31
7	3.50	15.50	2.58
8	4.00	15.80	1.90
9	4.50	16.20	2.47
10	5.00	16.50	1.82
11	5.50	16.80	1.79
12	6.00	17.10	1.75
13	6.50	17.20	0.58
14	7.00	17.40	1.15
15	7.50	17.60	1.14
16	8.00	17.70	0.56
17	8.50	17.90	1.12
18	9.00	18.10	1.10
19	9.50	18.20	0.55
20	10.00	18.30	0.55
21	10.50	18.50	1.08
22	11.00	18.60	0.54

USER INPUT BLANK VALUE

BLANK VALUE = 12.20966 micrograms carbon

BLANK FACTOR = 12.20966 / 10.99969 = +1.1E+00 ug/min Carbon

SAMPLE RESULTS:

(18.6 - 12.21169) (1)/(1) = +6.39E+00 g/L Carbon
(18.6 - 12.21169) (1)/(1) (12) = +5.32E-01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T5116DUP-1 Date: 12/13/96 Time: 16:25:40

Sample Size = 1 uL	Analyst : KR MONTEITH
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = .45 ug/minute C	% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	1.30	100.00
3	1.50	5.70	77.19
4	2.00	9.70	41.24
5	2.51	12.40	21.77
6	3.00	13.80	10.14
7	3.50	14.40	4.17
8	4.00	14.70	2.04
9	4.50	14.90	1.34
10	5.00	15.00	0.67
11	5.50	15.20	1.32
12	6.00	15.30	0.65
13	6.50	15.40	0.65
14	7.00	15.60	1.28
15	7.50	15.60	0.00
16	8.00	15.80	1.27
17	8.50	15.90	0.63
18	9.00	16.10	1.24
19	9.50	16.20	0.62
20	10.00	16.30	0.61
21	10.50	16.40	0.61
22	11.00	16.60	1.20

USER INPUT BLANK VALUE

BLANK VALUE = 4.949862 micrograms carbon

BLANK FACTOR = 4.949862 / 10.99969 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(16.6 - 4.950302) (1)/(1) =	+1.16E+01	g/L Carbon
(16.6 - 4.950302) (1)/(1) (12) =	+9.71E-01	Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T5116DUP-1 Date: 12/13/96 Time: 16:37:38

Sample Size = 1 uL	Analyst : KR MONTEITH
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = 1.11 ug/minute C	% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.00	8.00	96.25
3	1.50	15.00	46.67
4	2.00	17.60	14.77
5	2.50	18.80	6.38
6	3.00	19.40	3.09
7	3.50	19.90	2.51
8	4.00	20.40	2.45
9	4.50	20.70	1.45
10	5.00	21.00	1.43
11	5.50	21.20	0.94
12	6.00	21.50	1.40
13	6.50	21.70	0.92
14	7.00	21.90	0.91
15	7.50	22.10	0.90
16	8.00	22.20	0.45
17	8.50	22.40	0.89
18	9.00	22.60	0.88
19	9.50	22.80	0.88
20	10.00	22.90	0.44
21	10.50	23.00	0.43
22	11.00	23.20	0.86

USER INPUT BLANK VALUE

BLANK VALUE = 12.20966 micrograms carbon

BLANK FACTOR = 12.20966 / 10.99969 = +1.1E+00 ug/min Carbon

SAMPLE RESULTS:

(23.2 - 12.21075) (1)/(1) =	+1.10E+01	g/L Carbon
(23.2 - 12.21075) (1)/(1) (12) =	+9.16E-01	Molar Carbon

Sample Run By:

KR MONTEITH

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96TS116SPK-1 Date: 12/13/96 Time: 16:49:40

Sample Size = 1 uL Analyst : KR MONTEITH
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .45 ug/minute C % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference
1	0.51	0.00	0.00
2	1.01	7.70	100.00
3	1.51	82.90	90.71
4	2.00	185.10	55.21
5	2.50	254.80	27.35
6	3.00	290.50	12.29
7	3.50	304.30	4.53
8	4.00	308.90	1.49
9	4.50	310.30	0.45
10	5.00	310.90	0.19
11	5.50	311.20	0.10
12	6.00	311.40	0.06
13	6.50	311.70	0.10
14	7.00	311.90	0.06
15	7.50	312.10	0.06
16	8.00	312.30	0.06
17	8.50	312.50	0.06
18	9.00	312.50	0.00
19	9.50	312.70	0.06
20	10.00	312.90	0.06
21	10.50	313.10	0.06
22	11.00	313.20	0.03

USER INPUT BLANK VALUE

BLANK VALUE = 4.949862 micrograms carbon

BLANK FACTOR = 4.949862 / 10.99969 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(313.2 - 4.949478) (1)/(1) = +3.083E+02 g/L Carbon
(313.2 - 4.949478) (1)/(1) (12) = +2.569E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T5116SPK-1 Date: 12/13/96 Time: 17:03:23

Sample Size = 1 uL Analyst : KR MONTEITH
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 1.11 ug/minute C % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	62.60	100.00
3	1.51	217.40	71.21
4	2.01	270.60	19.66
5	2.51	281.80	3.97
6	3.00	285.10	1.16
7	3.51	286.40	0.45
8	4.00	287.20	0.28
9	4.50	287.80	0.21
10	5.00	288.30	0.17
11	5.50	288.60	0.10
12	6.00	289.10	0.17
13	6.50	289.40	0.10
14	7.00	289.70	0.10
15	7.50	290.00	0.10
16	8.00	290.20	0.07
17	8.50	290.40	0.07
18	9.00	290.70	0.10
19	9.50	290.80	0.03
20	10.00	291.00	0.07
21	10.50	291.20	0.07
22	11.00	291.40	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 12.20966 micrograms carbon

BLANK FACTOR = 12.20966 / 10.99969 = +1.1E+00 ug/min Carbon

SAMPLE RESULTS:

(291.4 - 12.20986) (1)/(1) = +2.792E+02 g/L Carbon
(291.4 - 12.20986) (1)/(1)(12) = +2.327E+01 Molar Carbon

Sample Run By:

KR MONTEITH

00000

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
	Sample Size in mL (SS)	1.0000	1.0000
BLNK	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	3.1	15.8
13806	µg of Carbon from Baseline (C2)	5	12.2

@TICTOC1

LIQUID

96010325

µg of Carbon = |C1-C2|

0

N/A

CARB2

LCM

RWS

KRM

12/14/96

12/13/96

Method Detection Limit in µg/mL

TIC

TOC

5

40

10:43 AM

µg of Carbon

1.90E+00

3.60E+00

B-109

Data Entered By:	LCM	Date:	12/14/96
Signature of Chemist:	<i>RW Schach</i>	Date:	12/16/96
BLANK.WB1 REV 1.0	342100ML		

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
STD	Sample Size in mL (SS)	1.0000	0.2000
	Dilution Factor (DF)	1	1
	Final Coulometer Reading in µg (C1)	566	551.3
13806	µg of Carbon from Baseline (C2)	5	12.2
@TICTOC1	Standard Book Number	22N12F	24N12F
	Standard Value (µg/ml)	602	3000

LIQUID

96010325

0

QC Actual in µg/mL = Standard Value (µg/mL)

N/A

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

CARB2

LCM

RWS

GM

12/14/96

12/13/96

10:43 AM

E-109

	TIC	TOC
Method Detection Limit in µg/mL	5	40
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	5.61E+02	2.70E+03
Percent Standard Recovery	93.2	89.8

Data Entered By:	LCM	Date:	12/14/96
Signature of Chemist:	<i>RW Johnson</i>	Date:	12/16/96

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
SAMPLE	Sample Size in mL (SS)	1.0000	1.0000
	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	17.2	18.6
13806	µg of Carbon from Baseline (C2)	5	12.2
@TICTOC1			

LIQUID
96010325
0
N/A
S96T005116
CARBZ
LCM
RWS
KRM
12/14/96
12/13/96
10:43 AM
B-109

µg of Carbon/mL = (C1-C2) * DF / SS
 µg of Carbon/mL for TIC = 5 if C1 < C2
 µg of Carbon/mL for TOC = 40 if C1 < C2

NOTE: FOR TOC: The Reported Result is < 40.

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL Note: <	1.22E+01	6.40E+00

Data Entered By:	LCM	Date: 12/14/96
Signature of Chemist:	<i>R.W. Schroed</i>	Date: 12/16/96

SAMPLE WB1 REV 1.0

342100ML

221

WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
	Sample Size in mL (SS)	1.0000	1.0000
DUP	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	16.6	23.2
13806	µg of Carbon from Baseline (C2)	5	12.2
	Known µg of C from Original Sample	1.22E+1	<8.40E+0
@TICTOC1			

LIQUID

96010325

0

N/A

S96T005116

CARB2

LCM

RWS

KRM

12/14/96

12/13/96

10:13 AM

B-109

µg of Carbon/mL = (C1-C2) * DF / SS
µg of Carbon/mL for TIC = 5 if C1 < C2
µg of Carbon/mL for TOC = 40 if C1 < C2

NOTE: FOR TOC: The Reported Result is < 40.

	TIC	TOC
Method Detection Limit in µg/mL	5	40
µg of Carbon/mL Note: <	1.16E+01	1.10E+01

Data Entered By:	LCM	Date: 12/14/96
Signature of Chemist:	<i>R.W. Schwed</i>	Date: 12/15/96

SAMPLE WB1 REV 1.0

342100ML

222

I:\342100\OUT\TTT13806.WB1

12/14/96

07:29:09

WORKBOOK PAGE: SPIKE5

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

	Sample Vial Data	TIC	TOC
SPK	Sample Volume in mL (SS)	1.0000	1.0000
	Final Coulometer Reading in µg (C1)	17.2	18.6
13806	Spiked Vial Data		
	Sample Volume in mL (SPK SS)	1.0000	1.0000
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
	Final Coulometer Reading in µg (C2)	313.2	291.4
LIQUID	Spike Book Number	22N12F	24N12F
	Spike Standard Value in µg/mL (SPK CONC)	602	3000

96010325

0

N/A

Percent Spike Recovery = (C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100

S96T005116

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100

gpc
1/19/97

CARB2

LCM

RWS

KRM

12/14/96

12/16/96

10/49 AM

QC Actual in µg/mL

QC Found in µg/mL

Percent Spike Recovery

TIC	TOC
6.02E+02	3.00E+03
5.92E+02	2.73E+03
98.3	90.9

Data Entered By:

LCM

Date: 12/14/96

Signature of Chemist:

Kevin Schuch

Date: 12/16/96

SPIKE.WB1 REV 1.1

342100ML

223

I:\342100\OUT\TT13806.WB1

12/14/96

07:29:44

LABCORE Completed Worklist Report for Worklist# 13861

Analyst: dgg

Instrument: CARB2

Book# _____

Method: LA 342-100 Rev/Mod E-U

Worklist Comment: B-109 TICTOC.

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		•TICTOCI TIC-02	SOLID	1	1.80	1.800	ug/g
1 BLNK	0		•TICTOCI TOC-02	SOLID	1	1.85e1	18.500	ug/g
2 STD	0		•TICTOCI TIC-02	SOLID	6.02e2	6.02e2	100.000	% Recovery
2 STD	0		•TICTOCI TOC-02	SOLID	3.00e03	2.65e3	88.333	% Recovery
3 SAMPLE	S96T005102	0	•TICTOCI TIC-02	SOLID	N/A	4.34e3	5.000	ug/g
3 SAMPLE	S96T005102	0	•TICTOCI TOC-02	SOLID	N/A	1.46e3	80.000	ug/g
4 DUP	S96T005102	0	•TICTOCI TIC-02	SOLID	4.34e3	4.80e3	10.066	RPD
4 DUP	S96T005102	0	•TICTOCI TOC-02	SOLID	1.46e3	1.46e3	0.000	RPD
5 SPK	S96T005102	0	•TICTOCI TIC-02	SOLID	100	108.2	108.200	% Recovery
5 SPK	S96T005102	0	•TICTOCI TOC-02	SOLID	100	83.4	83.400	% Recovery
6 SAMPLE	S96T005108	0	•TICTOCI TIC-02	SOLID	N/A	2.27e3	5.000	ug/g
6 SAMPLE	S96T005108	0	•TICTOCI TOC-02	SOLID	N/A	2.26e3	80.000	ug/g
7 DUP	S96T005108	0	•TICTOCI TIC-02	SOLID	2.27e3	2.39e3	5.150	RPD
7 DUP	S96T005108	0	•TICTOCI TOC-02	SOLID	2.26e3	2.39e3	5.591	RPD
8 SPK	S96T005108	0	•TICTOCI TIC-02	SOLID	100	97.9	97.900	% Recovery
8 SPK	S96T005108	0	•TICTOCI TOC-02	SOLID	100	117.4	117.400	% Recovery

Final page for worklist# 13861

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Ralph Schneider 1/3/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 13861

Analyst: dgg Instrument: CARB2 Book#

Method: LA-342-100 Rev/Mod E-C

Worklist Comment: B-109 TICTOC.

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	SOLID		
2 STD			@TICTOC1	SOLID		
3 SAMPLE	S96T005102 0		@TICTOC1	SOLID	96001237	B-109
	Analytes Requested: TIC-02 , TOC-02					
4 DUP	S96T005102 0		@TICTOC1	SOLID		
5 SPK	S96T005102 0		@TICTOC1	SOLID		
6 SAMPLE	S96T005108 0		@TICTOC1	SOLID	96001237	B-109
	Analytes Requested: TIC-02 , TOC-02					
7 DUP	S96T005108 0		@TICTOC1	SOLID		
8 SPK	S96T005108 0		@TICTOC1	SOLID		

Final page for worklist # 13861

Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

TIC/TOC: LA-342-100 (E-0)

WORKLIST

ANALYST
INITIALSANALYSIS
DATEANALYSIS
TIMEINSTRUMENT
CODE#
13861ANALYST
INITIALS
N.B.B.ANALYSIS
DATE
12-23-96ANALYSIS
TIME
05:00☒ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)
SPIKE/STANDARD VOLUME (mL)

TIC: —

TOC: —

FINAL COULOMETER READING (u TIC: 3.00 TOC: 36.40)

CAL 61

☐ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)
SPIKE/STANDARD VOLUME (mL)

TIC: 1.0 mV

TOC: 220 mV

FINAL COULOMETER READING (u TIC: 605.40 TOC: 566.70)

CAL 61

☒ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)
SPIKE/STANDARD VOLUME (mL)

TIC: —

TOC: —

FINAL COULOMETER READING (u TIC: 4.80 TOC: 17.90)

CAL 61

☐ BASELINE
BLANK☒ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)
SPIKE/STANDARD VOLUME (mL)

TIC: —

TOC: —

FINAL COULOMETER READING (u TIC: 467.9 TOC: 192.50)

CAL 61

☐ BASELINE
BLANK☒ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # = 596705102 Dup

STD # =

SAMPLE WEIGHT (g)
SPIKE/STANDARD VOLUME (mL)

TIC: —

TOC: —

FINAL COULOMETER READING (u TIC: 513.10 TOC: 193.20)

CAL 61

☐ BASELINE
BLANK☐ SAMPLE
DUPLICATE☒ SPIKE
TRIPLICATE

SAMPLE # = 596705102.500

STD # =

SAMPLE WEIGHT (g)
SPIKE/STANDARD VOLUME (mL)

TIC: 0.903 mV

TOC: 1.120 mV

FINAL COULOMETER READING (u TIC: 805.20 TOC: 449.30)

CAL 61

☐ BASELINE
BLANK☒ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # = 5961005105

STD # =

SAMPLE WEIGHT (g)
SPIKE/STANDARD VOLUME (mL)

TIC: —

TOC: —

FINAL COULOMETER READING (u TIC: 281.2 TOC: 313.30)

CAL 61

☐ BASELINE
BLANK☒ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # = 596705108 D-T

STD # =

SAMPLE WEIGHT (g)
SPIKE/STANDARD VOLUME (mL)

TIC: —

TOC: —

FINAL COULOMETER READING (u TIC: 321.0 TOC: 354.60)

CAL 61

HWF
WHO-SD-WM-DP-201, REV. 1

1/20/00

4/21/00

0.500 mV

10% TIC

10% TIC

10% TIC

10% TIC

10% TIC

10% TIC

8015001795

Sample weight: 0.500 mV

Sample weight: 10% TIC

Final coulometer reading TIC 587.0 TOC 976.00

HNF

WHC-SD-WM-DP-201, REV.

RUSH

LABCORE Data Entry Template for Worklist# 13861

Analyst: 10/28 Instrument: CARB2 Book# TIC 22N12-F

Method: LA-342-100 Rev/Mod E-0 TOC 24N12-F

Worklist Comment: B-109 TICTOC, RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	SOLID		
2 STD			@TICTOC1	SOLID		
3 SAMPLE	S96T005102 0		@TICTOC1	SOLID	96001237	B-109
Analytes Requested: TIC-02 , TOC-02						
4 DUP	S96T005102 0		@TICTOC1	SOLID		
5 SPK	S96T005102 0		@TICTOC1	SOLID		
6 SAMPLE	S96T005108 0		@TICTOC1	SOLID	96001237	B-109
Analytes Requested: TIC-02 , TOC-02						
7 DUP	S96T005108 0		@TICTOC1	SOLID		
8 SPK	S96T005108 0		@TICTOC1	SOLID		
9 SAMPLE	S96T005119 0		@TICTOC1	SOLID	96001238	B-109
Analytes Requested: TIC-02 , TOC-02						
10 DUP	S96T005119 0		@TICTOC1	SOLID		
11 SPK	S96T005119 0		@TICTOC1	SOLID		

moved to
WL 15851

Final page for worklist # 13861

Analyst Signature

Date

Analyst Signature

Date

Data Entry Comments:

Samples are not homogeneous.

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Sample Size in g	(SS)	0.0000	0.0000
Dilution Factor	(DF)	1	1
µg of Carbon in Sample	(C1)	4.8	17.9
µg of Carbon from Baseline	(C2)	3	36.4

@TIC/TOC1

SOLID

96010378

0

N/A

Carb2

NEW

Chemist

RWS

Analyst

DGG

12/23/96

12/23/96

09:16 PM

B-109

µg of Carbon = |C1-C2|

Method Detection Limit in ug/g

µg of Carbon

TIC	TOC
5	40
1.80E+00	1.85E+01

Data Entered By: *new*

Signature of Chemist: *RWS*

NEW

Date: 12/23/96

Date: 12/23/96

BLANK.WB1 REV 1.0

342100ML

XX

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 12/22/96

Time: 21:16:34

Sample Size = 1 uL

Dil Factor = 1

Blank ID # = BASELINE

Blank Value = N/A

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.20	0.00
2	1.01	0.30	33.33
3	1.51	0.60	50.00
4	2.01	1.10	45.45
5	2.51	1.20	8.33
6	3.00	1.40	14.29
7	3.50	1.50	6.67
8	4.00	1.60	6.25
9	4.50	1.70	5.88
10	5.00	1.80	5.56
11	5.50	1.90	5.26
12	6.00	2.00	5.00
13	6.50	2.10	4.76
14	7.00	2.20	4.55
15	7.50	2.30	4.35
16	8.00	2.40	4.17
17	8.50	2.50	4.00
18	9.00	2.60	3.85
19	9.50	2.70	3.70
20	10.00	2.80	3.57
21	10.50	2.90	3.45
22	11.00	3.00	3.33

BLANK VALUE = 3 micrograms carbon

BLANK FACTOR = 3 / 11.00061 =

+2.7E-01 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 22 TO 23

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 12/22/96

Time: 21:30:41

Sample Size = 1 uL

Analyst : DG GRIFFIN

Dil Factor = 1

Min Readings = 22

Blank ID # = BASELINE

Max Readings = 22

Blank Value = N/A

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.10	0.00
2	1.01	1.40	92.86
3	1.50	11.90	88.24
4	2.00	21.80	45.41
5	2.50	25.90	15.83
6	3.00	28.00	7.50
7	3.50	29.30	4.44
8	4.00	30.20	2.98
9	4.50	31.10	2.89
10	5.00	32.00	2.81
11	5.50	32.70	2.14
12	6.00	33.30	1.80
13	6.50	33.80	1.48
14	7.00	34.30	1.46
15	7.50	34.80	1.44
16	8.00	35.20	1.14
17	8.50	35.50	0.85
18	9.00	35.70	0.56
19	9.50	35.90	0.56
20	10.00	36.10	0.55
21	10.50	36.20	0.28
22	11.00	36.40	0.55

BLANK VALUE = 36.4 micrograms carbon

BLANK FACTOR = 36.4 / 11.00134 = +3.31E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DG GRIFFIN

00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK

Date: 12/22/96

Time: 22:13:17

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .27 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	1.00	0.00
2	1.01	1.80	44.44
3	1.51	2.20	18.18
4	2.00	2.70	18.52
5	2.50	3.00	10.00
6	3.00	3.20	6.25
7	3.50	3.30	3.03
8	4.00	3.40	2.94
9	4.50	3.50	2.86
10	5.00	3.60	2.78
11	5.50	3.70	2.70
12	6.00	3.80	2.63
13	6.50	4.00	5.00
14	7.00	4.00	0.00
15	7.50	4.10	2.44
16	8.00	4.20	2.38
17	8.50	4.30	2.33
18	9.00	4.40	2.27
19	9.50	4.50	2.22
20	10.00	4.60	2.17
21	10.50	4.70	2.13
22	11.00	4.80	2.08

USER INPUT BLANK VALUE

BLANK VALUE = 2.970363 micrograms carbon

BLANK FACTOR = 2.970363 / 11.00134 = +2.7E-01 ug/min Carbon

SAMPLE RESULTS:

(4.8 - 2.970165) (1)/(1) =

+1.8E+00 g/L Carbon

(4.8 - 2.970165) (1)/(1)(12) =

+1.5E-01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK

Date: 12/22/96

Time: 22:27:21

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.31 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.10	0.00
2	1.01	1.20	91.67
3	1.51	5.30	77.36
4	2.00	9.80	45.92
5	2.50	12.20	19.67
6	3.00	13.50	9.63
7	3.50	14.20	4.93
8	4.01	14.70	3.40
9	4.50	15.20	3.29
10	5.00	15.70	3.18
11	5.50	16.00	1.88
12	6.00	16.30	1.84
13	6.50	16.50	1.21
14	7.00	16.80	1.79
15	7.50	17.00	1.18
16	8.00	17.20	1.16
17	8.50	17.30	0.58
18	9.00	17.50	1.14
19	9.50	17.60	0.57
20	10.00	17.70	0.56
21	10.50	17.80	0.56
22	11.00	17.90	0.56

USER INPUT BLANK VALUE

BLANK VALUE = 36.41444 micrograms carbon

BLANK FACTOR = 36.41444 / 11.00134 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(17.9 - 36.40919) (1)/(1) =

< 5.00 E-3 g/L Carbon

(17.9 - 36.40919) (1)/(1) (12) =

< 4.17 E-4 Molar Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
STD	Sample Size in mL (SS)	1.0000	0.2000
	Dilution Factor (DF)	1	1
	Final Coulometer Reading in μg (C1)	605.4	566.7
13861	μg of Carbon from Baseline (C2)	3	36.4
	Standard Book Number	22N12F	24N12F
@TICTOC1	Standard Value ($\mu\text{g}/\text{mL}$)	602	3000

LIQUID
96010378
0
N/A
Carb2
NEW
RWS
DGG
12/23/96
12/23/96
09:16 PM
B-109

QC Actual in $\mu\text{g}/\text{mL}$ = Standard Value ($\mu\text{g}/\text{mL}$)

QC Found in $\mu\text{g}/\text{mL}$ = (C1 - C2) * DF / SS

QC Found in $\mu\text{g}/\text{mL}$ for TIC = 5 if C1 < C2

QC Found in $\mu\text{g}/\text{mL}$ for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

TIC	TOC
5	40
6.02E+02	3.00E+03
6.02E+02	2.65E+03
100.1	88.4

Method Detection Limit in $\mu\text{g}/\text{mL}$

QC Actual in $\mu\text{g}/\text{mL}$

QC Found in $\mu\text{g}/\text{mL}$

Percent Standard Recovery

Data Entered By: <i>AC Wright</i>	NEW	Date: 12/23/96
Signature of Chemist: <i>[Signature]</i>		Date: 12/23/96

STANDARD.WB1 REV 1.0 342100ML

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD. 22N12-F Date: 12/22/96 Time: 21:46:23

Sample Size = 1000 uL Analyst : DG GRIFFIN
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .27 ug/minute C % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	3.60	97.22
3	1.50	99.20	96.37
4	2.00	313.70	68.38
5	2.50	480.60	34.73
6	3.00	558.50	13.95
7	3.50	588.90	5.16
8	4.00	598.50	1.60
9	4.50	601.30	0.47
10	5.00	602.30	0.17
11	5.50	602.80	0.08
12	6.00	603.30	0.08
13	6.50	603.60	0.05
14	7.00	603.80	0.03
15	7.50	604.10	0.05
16	8.00	604.40	0.05
17	8.50	604.50	0.02
18	9.00	604.80	0.05
19	9.50	604.90	0.02
20	10.00	605.10	0.03
21	10.50	605.20	0.02
22	11.00	605.40	0.03

USER INPUT BLANK VALUE

BLANK VALUE = 2.970363 micrograms carbon

BLANK FACTOR = 2.970363 / 11.00134 = +2.7E-01 ug/min Carbon

SAMPLE RESULTS:

(605.4 - 2.970165) (1)/(1000) = +6.024E-01 g/L Carbon
(605.4 - 2.970165) (1)/(1000) (12) = +5.020E-02 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD. 24N12-F

Date: 12/22/96

Time: 21:59:36

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.31 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	4.10	95.12
3	1.50	75.40	94.56
4	2.00	316.90	76.21
5	2.50	490.10	35.34
6	3.00	538.90	9.06
7	3.50	553.60	2.66
8	4.00	557.80	0.75
9	4.50	559.80	0.36
10	5.00	560.90	0.20
11	5.50	561.90	0.18
12	6.00	562.70	0.14
13	6.50	563.60	0.16
14	7.00	564.10	0.09
15	7.50	564.50	0.07
16	8.00	565.00	0.09
17	8.50	565.40	0.07
18	9.00	565.70	0.05
19	9.50	566.00	0.05
20	10.00	566.30	0.05
21	10.50	566.50	0.04
22	11.00	566.70	0.04

USER INPUT BLANK VALUE

BLANK VALUE = 36.41444 micrograms carbon

BLANK FACTOR = 36.41444 / 11.00134 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(566.7 - 36.40879) (1)/(200) = +2.651E+00 g/L Carbon
(566.7 - 36.40879) (1)/(200) (12) = +2.210E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
SAMPLE	Sample Size in g (SS)	0.1072	0.1072
	Dilution Factor (DF)	1	1
13861	µg of Carbon in Sample (C1)	467.9	192.5
	µg of Carbon from Baseline (C2)	3	36.4
@TICTOC1			
SOLID			
96010378			
0	µg of Carbon/g = (C1-C2) * DF / SS		
	µg of Carbon/g for TIC = 5 if C1 < C2		
	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
S96T005102			
Carb2			
Prepared By			
NEW			
Chemist			
RWS			
DGG			
12/23/96			
12/23/96			
09:16 PM	Method Detection Limit in ug/g	5	40
B-109	µg of Carbon/g	4.34E+03	1.46E+03

Data Entered By: <i>TE Wright</i>	NEW	Date: 12/23/96
Signature of Chemist: <i>RW. Stinson</i>		Date: 12/23/96

SAMPLE.WB1 REV 1.0

342100ML

236

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005102

Date: 12/23/96

Time: 01:27:42

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .27 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.80	0.00
2	1.01	25.80	96.90
3	1.51	152.80	83.12
4	2.01	288.20	46.98
5	2.50	382.60	24.67
6	3.01	431.50	11.33
7	3.51	451.60	4.45
8	4.01	457.90	1.38
9	4.50	460.30	0.52
10	5.00	461.40	0.24
11	5.50	462.40	0.22
12	6.00	463.30	0.19
13	6.50	464.00	0.15
14	7.00	464.40	0.09
15	7.50	465.00	0.13
16	8.00	465.40	0.09
17	8.50	465.90	0.11
18	9.00	466.30	0.09
19	9.50	466.90	0.13
20	10.00	467.20	0.06
21	10.50	467.60	0.09
22	11.00	467.90	0.06

USER INPUT BLANK VALUE

BLANK VALUE = 2.970363 micrograms carbon

BLANK FACTOR = 2.970363 / 11.00134 = +2.7E-01 ug/min Carbon

SAMPLE RESULTS:

(467.9 - 2.970179) (1)/(1) = +4.649E+02 g/L Carbon
(467.9 - 2.970179) (1)/(1)(12) = +3.874E+01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005102

Date: 12/23/96

Time: 01:40:56

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.31 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.01	5.00	94.00
3	1.51	30.20	83.44
4	2.00	80.40	62.44
5	2.50	114.30	29.66
6	3.00	132.90	14.00
7	3.50	145.80	8.85
8	4.00	155.80	6.42
9	4.50	163.60	4.77
10	5.00	170.10	3.82
11	5.50	174.50	2.52
12	6.00	178.10	2.02
13	6.50	181.40	1.82
14	7.00	183.70	1.25
15	7.50	185.80	1.13
16	8.00	187.50	0.91
17	8.50	188.80	0.69
18	9.00	189.90	0.58
19	9.50	190.90	0.52
20	10.00	191.50	0.31
21	10.50	192.00	0.26
22	11.00	192.50	0.26

USER INPUT BLANK VALUE

BLANK VALUE = 36.41444 micrograms carbon

BLANK FACTOR = 36.41444 / 11.00134 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(192.5 - 36.40283) (1)/(1) = +1.561E+02 g/L Carbon
 (192.5 - 36.40283) (1)/(1) (12) = +1.301E+01 Molar Carbon
 <<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
DUP	Sample Size in g (SS)	0.1074	0.1074
	Dilution Factor (DF)	1	1
13861	µg of Carbon in Sample (C1)	518.1	193.7
	µg of Carbon from Baseline (C2)	3	36.4
@TICTOC1	Known µg of C from Original Sample	4.34E+3	1.46E+3

SOLID
96010378
0
N/A
S96T005102
Carb2
NEW
RWS
DGG
12/23/96
12/23/96
09:16 PM
B-109

µg of Carbon/g = (C1-C2) * DF / SS
 µg of Carbon/g for TIC = 5 if C1 < C2
 µg of Carbon/g for TOC = 40 if C1 < C2

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon/g	4.80E+03	1.46E+03

Data Entered By: <i>NEW</i>	NEW	Date: 12/23/96
Signature of Chemist: <i>RWS</i>		Date: 12/23/96

SAMPLE.WB1 REV 1.0

342100ML

239

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005102DUP Date: 12/23/96 Time: 01:56:25

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .27 ug/minute CAnalyst : DG GRIFFIN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	22.80	98.68
3	1.50	141.30	83.86
4	2.00	295.90	52.25
5	2.50	406.60	27.23
6	3.00	465.70	12.69
7	3.50	492.10	5.36
8	4.00	501.10	1.80
9	4.50	504.50	0.67
10	5.00	506.30	0.36
11	5.50	507.80	0.30
12	6.00	509.10	0.26
13	6.50	510.20	0.22
14	7.00	511.30	0.22
15	7.50	512.30	0.20
16	8.00	513.10	0.16
17	8.50	513.90	0.16
18	9.00	514.80	0.17
19	9.50	515.60	0.16
20	10.00	516.40	0.15
21	10.50	517.20	0.15
22	11.00	518.10	0.17

USER INPUT BLANK VALUE

BLANK VALUE = 2.970363 micrograms carbon

BLANK FACTOR = 2.970363 / 11.00134 = +2.7E-01 ug/min Carbon

SAMPLE RESULTS:

(518.1 - 2.969912) (1)/(1)	=	+5.151E+02	g/L Carbon
(518.1 - 2.969912) (1)/(1) (12)	=	+4.293E+01	Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005102DUP Date: 12/23/96 Time: 02:09:31

Sample Size = 1 uL	Analyst : DG GRIFFIN
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = 3.31 ug/minute C	% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	8.70	94.25
3	1.51	50.20	82.67
4	2.01	93.60	46.37
5	2.51	119.10	21.41
6	3.01	134.00	11.12
7	3.51	144.90	7.52
8	4.01	153.70	5.73
9	4.51	161.60	4.89
10	5.00	167.70	3.64
11	5.50	172.90	3.01
12	6.00	177.30	2.48
13	6.50	180.40	1.72
14	7.00	183.10	1.47
15	7.50	185.20	1.13
16	8.00	187.30	1.12
17	8.50	188.70	0.74
18	9.00	190.10	0.74
19	9.50	191.20	0.58
20	10.00	192.20	0.52
21	10.50	193.00	0.41
22	11.00	193.70	0.36

USER INPUT BLANK VALUE

BLANK VALUE = 36.41444 micrograms carbon

BLANK FACTOR = 36.41444 / 11.00134 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(193.7 - 36.41826) (1)/(1) =	+1.573E+02	g/L Carbon
(193.7 - 36.41826) (1)/(1) (12) =	+1.311E+01	Molar Carbon
<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>		

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: SPIKE5

TIC/TOC : LA-342-100 (E-0)

SOLIDS

Sample Vial Data		TIC	TOC
SPK	Sample Size in g (SS)	0.1072	0.1072
	Final Coulometer Reading in µg (C1)	467.9	192.5
13861	Spiked Vial Data		
	Sample Size in g (SPK SS)	0.1108	0.1108
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
	Final Coulometer Reading in µg (C2)	809.2	449.3
SOLID	Spike Book Number	22N12F	24N12F
	Spike Standard Value in µg/mL (SPK CONC)	602	3000
96010378			
0			
N/A			
S96T005102	Percent Spike Recovery = (C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100		
Carb2	QC Actual in µg/mL = Spike Value (µg/mL)		
	QC Found in µg/mL = (Percent Spike Recovery) * (QC Actual) / 100		
NEW			
RWS			
DGG			
12/23/96			
12/23/96			
09:16 PM	QC Actual in µg/mL	6.02E+02	3.00E+03
	QC Found in µg/mL	6.51E+02	2.50E+03
B-109	Percent Spike Recovery	108.2	83.4

Data Entered By: <i>TC Wright</i>	NEW	Date: 12/23/96
Signature of Chemist: <i>TC Wright</i>		Date: 12/23/96

SPIKE WB1 REV 1.1

342100ML

242

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005102SPK Date: 12/23/96 Time: 02:28:04

Sample Size = 1 uL	Analyst : DG GRIFFIN
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = .27 ug/minute C	% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	42.90	98.83
3	1.51	216.30	80.17
4	2.00	446.10	51.51
5	2.50	626.80	28.83
6	3.00	726.20	13.69
7	3.50	772.90	6.04
8	4.00	791.50	2.35
9	4.50	797.20	0.72
10	5.00	799.80	0.33
11	5.50	801.10	0.16
12	6.00	802.20	0.14
13	6.50	803.20	0.12
14	7.00	804.10	0.11
15	7.50	804.90	0.10
16	8.00	805.50	0.07
17	8.50	806.20	0.09
18	9.00	806.80	0.07
19	9.50	807.40	0.07
20	10.00	808.00	0.07
21	10.50	808.50	0.06
22	11.00	809.20	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 2.970363 micrograms carbon

BLANK FACTOR = 2.970363 / 11.00134 = +2.7E-01 ug/min Carbon

SAMPLE RESULTS:

(809.2 - 2.969683) (1)/(1) =	+8.062E+02 g/L Carbon
(809.2 - 2.969683) (1)/(1) (12) =	+6.719E+01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005102SPK Date: 12/23/96 Time: 02:45:20

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 3.31 ug/minute CAnalyst : DG GRIFFIN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis	Time	==== Coulometer	==== % Difference ==
1	0.51		0.80	0.00
2	1.01		3.20	75.00
3	1.51		22.00	85.45
4	2.00		127.40	82.73
5	2.50		275.50	53.76
6	3.00		353.50	22.07
7	3.50		388.50	9.01
8	4.00		404.60	3.98
9	4.50		413.10	2.06
10	5.00		419.60	1.55
11	5.50		424.40	1.13
12	6.00		428.50	0.96
13	6.50		431.80	0.76
14	7.00		434.70	0.67
15	7.50		437.70	0.69
16	8.00		439.80	0.48
17	8.50		441.90	0.48
18	9.00		443.90	0.45
19	9.50		445.40	0.34
20	10.00		446.90	0.34
21	10.50		448.10	0.27
22	11.00		449.30	0.27

USER INPUT BLANK VALUE

BLANK VALUE = 36.41444 micrograms carbon

BLANK FACTOR = 36.41444 / 11.00134 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(449.3 - 36.40616) (1)/(1)	=	+4.129E+02	g/L Carbon
(449.3 - 36.40616) (1)/(1) (12)	=	+3.441E+01	Molar Carbon

<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: SAM6

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
	Sample Size in g (SS)	0.1225	0.1225
SAMPLE	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	281.2	313.3
13861	µg of Carbon from Baseline (C2)	3	36.4
@TICTOC1			

SOLID
96010378
0
N/A
S96T005108
Carb2
Prepared By
NEW
RWS
DGG
12/23/96
12/23/96
09:16 PM
B-109

$\mu\text{g of Carbon/g} = (C1-C2) * DF / SS$
 $\mu\text{g of Carbon/g for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/g for TOC} = 40 \text{ if } C1 < C2$

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon/g	2.27E+03	2.26E+03

Data Entered By: <i>Newright</i>	NEW	Date: 12/23/96
Signature of Chemist: <i>DW Schreder</i>		Date: 12/23/96

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005108

Date: 12/23/96

Time: 03:08:18

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .27 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	3.10	90.32
3	1.51	25.10	87.65
4	2.00	88.30	71.57
5	2.50	168.00	47.44
6	3.00	224.00	25.00
7	3.50	252.90	11.43
8	4.00	263.90	4.17
9	4.50	268.30	1.64
10	5.00	270.60	0.85
11	5.50	272.10	0.55
12	6.00	273.20	0.40
13	6.50	274.20	0.36
14	7.00	275.20	0.36
15	7.50	276.10	0.33
16	8.00	277.00	0.32
17	8.50	277.80	0.29
18	9.00	278.50	0.25
19	9.50	279.40	0.32
20	10.00	280.00	0.21
21	10.50	280.70	0.25
22	11.00	281.20	0.18

USER INPUT BLANK VALUE

BLANK VALUE = 2.970363 micrograms carbon

BLANK FACTOR = 2.970363 / 11.00134 = +2.7E-01 ug/min Carbon

SAMPLE RESULTS:

(281.2 - 2.969687) (1)/(1)	=	+2.782E+02	g/L Carbon
(281.2 - 2.969687) (1)/(1)(12)	=	+2.319E+01	Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005108

Date: 12/23/96

Time: 03:21:10

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.31 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.60	0.00
2	1.01	15.80	96.20
3	1.50	93.70	83.14
4	2.00	180.50	48.09
5	2.50	238.90	24.45
6	3.00	266.00	10.19
7	3.50	278.60	4.52
8	4.00	286.00	2.59
9	4.50	291.30	1.82
10	5.00	295.40	1.39
11	5.50	298.40	1.01
12	6.00	301.00	0.86
13	6.50	303.20	0.73
14	7.00	304.90	0.56
15	7.50	306.70	0.59
16	8.00	307.90	0.39
17	8.50	309.00	0.36
18	9.00	310.20	0.39
19	9.50	311.10	0.29
20	10.00	311.90	0.26
21	10.50	312.80	0.29
22	11.00	313.30	0.16

USER INPUT BLANK VALUE

BLANK VALUE = 36.41444 micrograms carbon

BLANK FACTOR = 36.41444 / 11.00134 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(313.3 - 36.40338) (1)/(1) = +2.769E+02 g/L Carbon
 (313.3 - 36.40338) (1)/(1) (12) = +2.307E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!!>>>>

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: DUP7

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
DUP	Sample Size in g (SS)	0.1332	0.1332
13861	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	321	354.6
	µg of Carbon from Baseline (C2)	3	36.4
@TICTOC1	Known µg of C from Original Sample	2.27E+3	2.26E+3

SOLID
96010378
0
N/A
S96T005108
Carb2
NEW
RWS
DGG
12/23/96
12/23/96
09:16 PM
B-109

µg of Carbon/g = (C1-C2) * DF / SS
 µg of Carbon/g for TIC = 5 if C1 < C2
 µg of Carbon/g for TOC = 40 if C1 < C2

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon/g	2.39E+03	2.39E+03

Data Entered By: <i>RC Wright</i>	NEW	Date: 12/23/96
Signature of Chemist: <i>RC Wright</i>		Date: 12/23/96

SAMPLE.WB1 REV 1.0

342100ML

248

#1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005108DUP Date: 12/23/96 Time: 04:35:17

Sample Size = 1 uL	Analyst : DG GRIFFIN
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = .27 ug/minute C	% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	2.60	0.00
2	1.01	5.50	52.73
3	1.51	32.10	82.87
4	2.00	96.50	66.74
5	2.50	185.10	47.87
6	3.00	252.20	26.61
7	3.50	288.20	12.49
8	4.00	303.10	4.92
9	4.50	307.90	1.56
10	5.00	310.30	0.77
11	5.50	311.70	0.45
12	6.00	312.90	0.38
13	6.50	314.00	0.35
14	7.00	315.00	0.32
15	7.50	315.90	0.28
16	8.00	316.80	0.28
17	8.50	317.60	0.25
18	9.00	318.30	0.22
19	9.50	319.00	0.22
20	10.00	319.70	0.22
21	10.50	320.30	0.19
22	11.00	321.00	0.22

USER INPUT BLANK VALUE

BLANK VALUE = 2.970363 micrograms carbon

BLANK FACTOR = 2.970363 / 11.00134 = +2.7E-01 ug/min Carbon

SAMPLE RESULTS:

(321 - 2.969687) (1)/(1) =	+3.180E+02 g/L Carbon
(321 - 2.969687) (1)/(1) (12) =	+2.650E+01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

X

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005108DUP

Date: 12/23/96

Time: 04:48:07

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.31 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.60	0.00
2	1.01	20.80	97.12
3	1.50	116.00	82.07
4	2.00	216.90	46.52
5	2.50	277.70	21.89
6	3.00	307.90	9.81
7	3.50	322.20	4.44
8	4.00	329.90	2.33
9	4.50	334.80	1.46
10	5.00	338.60	1.12
11	5.50	341.70	0.91
12	6.00	343.90	0.64
13	6.50	345.80	0.55
14	7.00	347.60	0.52
15	7.50	348.70	0.32
16	8.00	350.00	0.37
17	8.50	350.90	0.26
18	9.00	351.90	0.28
19	9.50	352.70	0.23
20	10.00	353.50	0.23
21	10.50	354.10	0.17
22	11.00	354.60	0.14

USER INPUT BLANK VALUE

BLANK VALUE = 36.41444 micrograms carbon

BLANK FACTOR = 36.41444 / 11.00134 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(354.6 - 36.40939) (1)/(1) = +3.182E+02 g/L Carbon
 (354.6 - 36.40939) (1)/(1) (12) = +2.652E+01 Molar Carbon
 <<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: SPIKE8

TIC/TOC : LA-342-100 (E-0)

SOLIDS

	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.1225	0.1225
	Final Coulometer Reading in µg (C1)	281.2	313.3
13861	Spiked Vial Data		
	Sample Size in g (SPK SS)	0.1274	0.1274
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
	Final Coulometer Reading in µg (C2)	587.1	678
SOLID	Spike Book Number	22N12F	24N12F
	Spike Standard Value in µg/mL (SPK CONC)	602	3000

96010378

0

N/A

S96T005108

Carb2

NEW

RWS

DGG

12/23/96

12/23/96

09:16 PM

B-109

Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100$

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100

gr
1/9/97

	TIC	TOC
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	5.89E+02	3.52E+03
Percent Spike Recovery	97.9	117.4

Data Entered By: <i>ACWright</i>	NEW	Date: 12/23/96
Signature of Chemist: <i>RW Johnson</i>		Date: 12/23/96

SPIKE WB1 REV 1.1

342100ML

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005108SPK Date: 12/23/96 Time: 04:06:22

Sample Size = 1 uL Analyst : DG GRIFFIN
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .27 ug/minute C % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.20	0.00
2	1.01	3.40	94.12
3	1.50	81.00	95.80
4	2.00	270.20	70.02
5	2.50	436.40	38.08
6	3.00	519.20	15.95
7	3.50	556.30	6.67
8	4.00	570.20	2.44
9	4.50	574.40	0.73
10	5.00	576.50	0.36
11	5.50	578.30	0.31
12	6.00	579.30	0.17
13	6.50	580.30	0.17
14	7.00	581.30	0.17
15	7.50	582.10	0.14
16	8.00	583.00	0.15
17	8.50	583.80	0.14
18	9.00	584.50	0.12
19	9.50	585.30	0.14
20	10.00	585.90	0.10
21	10.50	586.50	0.10
22	11.00	587.10	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 2.970363 micrograms carbon

BLANK FACTOR = 2.970363 / 11.00134 = +2.7E-01 ug/min Carbon

SAMPLE RESULTS:

(587.1 - 2.969683) (1)/(1) = +5.841E+02 g/L Carbon
(587.1 - 2.969683) (1)/(1)(12) = +4.868E+01 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005108SPK

Date: 12/23/96

Time: 04:19:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.31 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis	Time	Coulometer	% Difference ==
1	0.51		0.50	0.00
2	1.01		41.30	98.79
3	1.51		275.10	84.99
4	2.01		495.00	44.42
5	2.51		583.90	15.23
6	3.01		620.60	5.91
7	3.51		638.60	2.82
8	4.00		647.40	1.36
9	4.50		653.20	0.89
10	5.00		657.70	0.68
11	5.50		661.20	0.53
12	6.00		664.30	0.47
13	6.50		666.50	0.33
14	7.00		668.70	0.33
15	7.50		670.60	0.28
16	8.00		672.10	0.22
17	8.50		673.40	0.19
18	9.00		674.40	0.15
19	9.50		675.50	0.16
20	10.00		676.50	0.15
21	10.50		677.30	0.12
22	11.00		678.00	0.10

USER INPUT BLANK VALUE

BLANK VALUE = 36.41444 micrograms carbon

BLANK FACTOR = 36.41444 / 11.00134 = +3.3E+00 ug/min Carbon

SAMPLE RESULTS:

(678 - 36.41495) (1)/(1)	=	+6.416E+02	g/L Carbon
(678 - 36.41495) (1)/(1) (12)	=	+5.347E+01	Molar Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DG GRIFFIN

00000

LABCORE Completed Worklist Report for Worklist# 13862

Analyst: dpb Instrument: CARB2 Book# TIC 22N12F

Method: LA-342-100 Rev/Mod E-0 TOC 24N12F

Worklist Comment: B-109 TICTOC. RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	SOLID	1	1.00E-1	0.100	ug/g
1 BLNK	0		@TICTOC1 TOC-02	SOLID	1	1.27E+1	12.700	ug/g
2 STD	0		@TICTOC1 TIC-02	SOLID	6.02E+02	5.96E+2	99.003 % Recovery	
2 STD	0		@TICTOC1 TOC-02	SOLID	3.00E+03	2.72E+3	90.667 % Recovery	
3 SAMPLE	S96T005131	0	@TICTOC1 TIC-02	SOLID	N/A	5.17E+02	5.000	ug/g
3 SAMPLE	S96T005131	0	@TICTOC1 TOC-02	SOLID	N/A	7.84E+01	40.000	ug/g
4 DUP	S96T005131	0	@TICTOC1 TIC-02	SOLID	5.17E+2	4.89E+2	5.567 RPD	
4 DUP	S96T005131	0	@TICTOC1 TOC-02	SOLID	7.84E+1	6.49E+1	18.842 RPD	
5 SPK	S96T005131	0	@TICTOC1 TIC-02	SOLID	1.00E+02	9.87E+01	98.700 % Recovery	
5 SPK	S96T005131	0	@TICTOC1 TOC-02	SOLID	1.00E+02	9.34E+01	93.400 % Recovery	
6 SAMPLE	S96T005132	0	@TICTOC1 TIC-02	SOLID	N/A	2.02E+02	5.000	ug/g
6 SAMPLE	S96T005132	0	@TICTOC1 TOC-02	SOLID	N/A	9.84E+01	40.000	ug/g
7 DUP	S96T005132	0	@TICTOC1 TIC-02	SOLID	2.02E+2	2.04E+2	0.985 RPD	
7 DUP	S96T005132	0	@TICTOC1 TOC-02	SOLID	9.84E+1	9.97E+1	1.312 RPD	

Final page for worklist# 13862

see attached
Analyst Signature Date

[Signature] 12-23-96
Analyst Signature Date

validated into Labcore
Reviewer Signature Date 12/24/96

10/10/96 12:57
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 13862

Analyst: DPB Instrument: CARB2 Book# 22 N12-F/24 N12-F

Method: LA-342-100 Rev/Mod E-0

Worklist Comment: B-109 TICTOC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	SOLID		
2 STD			@TICTOC1	SOLID		
3 SAMPLE	S96T005131 0		@TICTOC1	SOLID	96001238	B-109
Analytes Requested: TIC-02 , TOC-02						
4 DUP	S96T005131 0		@TICTOC1	SOLID		
5 SPK	S96T005131 0		@TICTOC1	SOLID		
6 SAMPLE	S96T005132 0		@TICTOC1	SOLID	96001238	B-109
Analytes Requested: TIC-02 , TOC-02						
7 DUP	S96T005132 0		@TICTOC1	SOLID		

Final page for worklist # 13862

Daniel P. Brantley 12/23/96 1700
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code. 255

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK1

Date: 12/23/96

Time: 10:37:12

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .45 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	1.30	0.00
2	1.01	1.90	31.58
3	1.51	2.40	20.83
4	2.00	2.80	14.29
5	2.50	3.00	6.67
6	3.00	3.20	6.25
7	3.50	3.30	3.03
8	4.00	3.40	2.94
9	4.50	3.70	8.11
10	5.00	3.70	0.00
11	5.50	3.80	2.63
12	6.00	4.00	5.00
13	6.50	4.10	2.44
14	7.00	4.20	2.38
15	7.50	4.30	2.33
16	8.00	4.40	2.27
17	8.50	4.50	2.22
18	9.00	4.60	2.17
19	9.50	4.80	4.17
20	10.00	4.80	0.00
21	10.50	5.00	4.00
22	11.00	5.00	0.00

USER INPUT BLANK VALUE

BLANK VALUE = 4.950302 micrograms carbon

BLANK FACTOR = 4.950302 / 11.00067 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(5 - 4.950329) (1)/(1) =

+5.0E-02 g/L Carbon

(5 - 4.950329) (1)/(1) (12) =

+4.1E-03 Molar Carbon

Sample Run By:

DP BROMLEY

1/7/97

XXXXX

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION ANALYSIS ON PAGES 256 TO 258

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK1

Date: 12/23/96

Time: 10:51:13

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.66 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          0.10          0.00
 2          1.01          1.30         92.31
 3          1.51          8.60         84.88
 4          2.00         16.00         46.25
 5          2.50         20.30         21.18
 6          3.01         22.20          8.56
 7          3.51         23.40          5.13
 8          4.01         24.00          2.50
 9          4.50         24.50          2.04
10          5.00         25.00          2.00
11          5.50         25.40          1.57
12          6.00         25.70          1.17
13          6.50         26.00          1.15
14          7.00         26.30          1.14
15          7.50         26.50          0.75
16          8.00         26.70          0.75
17          8.50         26.90          0.74
18          9.00         27.10          0.74
19          9.50         27.20          0.37
20         10.00         27.30          0.37
21         10.50         27.50          0.73
22         11.00         27.60          0.36
  
```

USER INPUT BLANK VALUE

BLANK VALUE = 40.26246 micrograms carbon

BLANK FACTOR = 40.26246 / 11.00067 = +3.7E+00 ug/min Carbon

SAMPLE RESULTS:

(27.6 - 40.27206) (1)/(1) = < 5.00 E-3 g/L Carbon
 (27.6 - 40.27206) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXXX

257

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BASE1

Date: 12/23/96

Time: 09:35:18

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE1
Blank Value = N/A

Analyst : DP BROMLEY
Min Readings = 22
Max Readings = 22
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.30	0.00
2	1.01	0.60	50.00
3	1.50	0.80	25.00
4	2.00	1.10	27.27
5	2.50	1.50	26.67
6	3.00	1.80	16.67
7	3.50	2.20	18.18
8	4.00	2.50	12.00
9	4.50	2.80	10.71
10	5.00	3.00	6.67
11	5.50	3.30	9.09
12	6.00	3.50	5.71
13	6.50	3.60	2.78
14	7.00	3.80	5.26
15	7.50	4.00	5.00
16	8.00	4.00	0.00
17	8.50	4.10	2.44
18	9.00	4.40	6.82
19	9.50	4.60	4.35
20	10.00	4.70	2.13
21	10.50	4.90	4.08
22	11.00	4.90	0.00

BLANK VALUE = 4.9 micrograms carbon
BLANK FACTOR = 4.9 / 10.99982 =

+4.5E-01 ug/min Carbon

Sample Run By:

DP BROMLEY

XXXXX

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BASE1

Date: 12/23/96

Time: 09:49:16

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE1
Blank Value = N/A

Analyst : DP BROMLEY
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	2.00	100.00
3	1.50	11.30	82.30
4	2.01	21.30	46.95
5	2.51	27.20	21.69
6	3.01	30.20	9.93
7	3.50	32.40	6.79
8	4.00	33.90	4.42
9	4.50	35.30	3.97
10	5.00	36.20	2.49
11	5.50	37.00	2.16
12	6.00	37.60	1.60
13	6.50	38.30	1.83
14	7.00	38.40	0.26
15	7.50	38.80	1.03
16	8.00	39.10	0.77
17	8.50	39.40	0.76
18	9.00	39.60	0.51
19	9.50	39.80	0.50
20	10.00	40.00	0.50
21	10.50	40.20	0.50
22	11.00	40.30	0.25

BLANK VALUE = 40.3 micrograms carbon

BLANK FACTOR = 40.3 / 11.00067 =

+3.66E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

HNF

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 22N12-F

Date: 12/23/96

Time: 10:05:31

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .45 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1          0.51          3.10          0.00
  2          1.01          5.50         43.64
  3          1.51         56.10         90.20
  4          2.00        215.80        74.00
  5          2.50       402.60       46.40
  6          3.00       512.30      21.41
  7          3.50       564.00       9.17
  8          4.01       586.50       3.84
  9          4.50       593.60       1.20
 10          5.00       596.10       0.42
 11          5.50       597.20       0.18
 12          6.00       597.80       0.10
 13          6.50       598.40       0.10
 14          7.00       598.80       0.07
 15          7.50       599.00       0.03
 16          8.00       599.30       0.05
 17          8.50       599.60       0.05
 18          9.00       599.80       0.03
 19          9.50       600.00       0.03
 20         10.00       600.10       0.02
 21         10.50       600.40       0.05
 22         11.00       600.60       0.03
  
```

USER INPUT BLANK VALUE

BLANK VALUE = 4.950302 micrograms carbon

BLANK FACTOR = 4.950302 / 11.00067 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(600.6 - 4.949505) (1)/(1) = +5.957E+02 g/L Carbon
(600.6 - 4.949505) (1)/(1) (12) = +4.964E+01 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXXX

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 24N12-F

Date: 12/23/96

Time: 10:21:09

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.66 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          0.10          0.00
 2          1.01          4.30          97.67
 3          1.51          84.30          94.90
 4          2.00         352.30          76.07
 5          2.50         513.90          31.45
 6          3.00         557.70           7.85
 7          3.50         571.90           2.48
 8          4.00         576.10           0.73
 9          4.50         578.10           0.35
10          5.00         579.40           0.22
11          5.50         580.20           0.14
12          6.00         580.90           0.12
13          6.50         581.40           0.09
14          7.00         582.00           0.10
15          7.50         582.30           0.05
16          8.00         582.60           0.05
17          8.50         582.90           0.05
18          9.00         583.40           0.09
19          9.50         583.50           0.02
20         10.00         583.80           0.05
21         10.50         584.00           0.03
22         11.00         584.20           0.03

```

USER INPUT BLANK VALUE

BLANK VALUE = 40.26246 micrograms carbon

BLANK FACTOR = 40.26246 / 11.00067 = +3.7E+00 ug/min Carbon

SAMPLE RESULTS:

```

( 584.2 - 40.25576 ) (1)/(1) = +5.439E+02 g/L Carbon
( 584.2 - 40.25576 ) (1)/(1) (12) = +4.533E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

```

Sample Run By:

DP BROMLEY

XXXXXX

SS: .1276 g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005131SAM Date: 12/23/96 Time: 11:17:29

Sample Size = 1 uL Analyst : DP BROMLEY
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .45 ug/minute C % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.90	100.00
3	1.51	4.10	78.05
4	2.00	12.70	67.72
5	2.50	28.10	54.80
6	3.00	46.00	38.91
7	3.50	58.90	21.90
8	4.00	65.10	9.52
9	4.50	68.00	4.26
10	5.00	68.90	1.31
11	5.50	69.50	0.86
12	6.00	69.70	0.29
13	6.50	69.90	0.29
14	7.00	70.00	0.14
15	7.50	70.20	0.28
16	8.00	70.30	0.14
17	8.50	70.50	0.28
18	9.00	70.50	0.00
19	9.50	70.70	0.28
20	10.00	70.70	0.00
21	10.50	70.90	0.28
22	11.00	70.90	0.00

USER INPUT BLANK VALUE

BLANK VALUE = 4.950302 micrograms carbon

BLANK FACTOR = 4.950302 / 11.00067 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(70.9 - 4.949835) (1)/(1) = +6.60E+01 g/L Carbon
(70.9 - 4.949835) (1)/(1) (12) = +5.50E+00 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXX

SS: 1/2769

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005131SAM

Date: 12/23/96

Time: 11:32:43

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.66 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.20	0.00
2	1.01	1.00	80.00
3	1.50	9.80	89.80
4	2.00	24.90	60.64
5	2.50	37.90	34.30
6	3.00	42.60	11.03
7	3.50	44.80	4.91
8	4.00	46.00	2.61
9	4.50	46.90	1.92
10	5.00	47.50	1.26
11	5.50	47.90	0.84
12	6.00	48.40	1.03
13	6.50	48.60	0.41
14	7.00	48.90	0.61
15	7.50	49.20	0.61
16	8.00	49.30	0.20
17	8.50	49.50	0.40
18	9.00	49.70	0.40
19	9.50	49.90	0.40
20	10.00	50.00	0.20
21	10.50	50.20	0.40
22	11.00	50.30	0.20

USER INPUT BLANK VALUE

BLANK VALUE = 40.26246 micrograms carbon

BLANK FACTOR = 40.26246 / 11.00067 = +3.7E+00 ug/min Carbon

SAMPLE RESULTS:

(50.3 - 40.25218) (1)/(1) = +1.00E+01 g/L Carbon
 (50.3 - 40.25218) (1)/(1) (12) = +8.37E-01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXXX

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005131DUP

Date: 12/23/96

Time: 11:45:33

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .45 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          0.10          0.00
 2          1.01          0.70          85.71
 3          1.51          3.50          80.00
 4          2.00         10.20          65.69
 5          2.50         24.20          57.85
 6          3.00         43.60          44.50
 7          3.50         61.50          29.11
 8          4.00         72.00          14.58
 9          4.50         76.90           6.37
10          5.00         79.10           2.78
11          5.50         80.00           1.13
12          6.00         80.40           0.50
13          6.50         80.70           0.37
14          7.00         80.80           0.12
15          7.50         81.00           0.25
16          8.00         81.10           0.12
17          8.50         81.20           0.12
18          9.00         81.40           0.25
19          9.50         81.40           0.00
20         10.00         81.60           0.25
21         10.50         81.70           0.12
22         11.00         81.80           0.12

```

USER INPUT BLANK VALUE

BLANK VALUE = 4.950302 micrograms carbon

BLANK FACTOR = 4.950302 / 11.00067 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(81.8 - 4.949835) (1)/(1) = +7.69E+01 g/L Carbon
(81.8 - 4.949835) (1)/(1) (12) = +6.40E+00 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXX

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005131DUP

Date: 12/23/96

Time: 13:17:50

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 3.66 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

```

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
  1          0.51          0.00          0.00
  2          1.01          0.90         100.00
  3          1.50          8.70         89.66
  4          2.00         22.00         60.45
  5          2.50         34.60         36.42
  6          3.00         41.20         16.02
  7          3.50         44.10          6.58
  8          4.00         45.60          3.29
  9          4.50         46.50          1.94
 10          5.00         47.10          1.27
 11          5.50         47.70          1.26
 12          6.00         48.10          0.83
 13          6.50         48.40          0.62
 14          7.00         48.70          0.62
 15          7.50         48.90          0.41
 16          8.00         49.20          0.61
 17          8.50         49.40          0.40
 18          9.00         49.70          0.60
 19          9.50         49.90          0.40
 20         10.00         50.10          0.40
 21         10.50         50.40          0.60
 22         11.00         50.50          0.20

```

USER INPUT BLANK VALUE

BLANK VALUE = 40.26246 micrograms carbon

BLANK FACTOR = 40.26246 / 11.00067 = +3.7E+00 ug/min Carbon

SAMPLE RESULTS:

```

( 50.5 - 40.25576 ) (1)/(1) = +1.02E+01 g/L Carbon
( 50.5 - 40.25576 ) (1)/(1) (12) = +8.54E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

```

Sample Run By:

DP BROMLEY

XXXXXX

265

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005131SPK Date: 12/23/96 Time: 13:33:12
Sample Size = ~~1.00~~ ^{0.500 mL} 0.500 mL 22.112F Analyst : DP BROMLEY
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .45 ug/minute C % Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	1.20	0.00
2	1.01	2.20	45.45
3	1.51	33.10	93.35
4	2.01	120.60	72.55
5	2.51	219.10	44.96
6	3.01	290.10	24.47
7	3.51	329.00	11.82
8	4.01	347.30	5.27
9	4.50	353.50	1.75
10	5.00	355.40	0.53
11	5.50	356.10	0.20
12	6.01	356.60	0.14
13	6.51	356.90	0.08
14	7.00	357.10	0.06
15	7.50	357.50	0.11
16	8.00	357.50	0.00
17	8.50	357.60	0.03
18	9.00	357.70	0.03
19	9.50	358.00	0.08
20	10.00	358.00	0.00
21	10.50	358.20	0.06
22	11.00	358.30	0.03

USER INPUT BLANK VALUE

BLANK VALUE = 4.950302 micrograms carbon

BLANK FACTOR = 4.950302 / 11.00067 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(358.3 - 4.950741) (1)/(1) = +3.533E+02 g/L Carbon
(358.3 - 4.950741) (1)/(1) (12) = +2.945E+01 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXX

S.S. : .1101g

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005131SPK Date: 12/23/96 Time: 13:46:45
Sample Size = ~~1 mL~~ ^{3.00 mL} 0.100 mL 24 N12F Analyst : DP BROMLEY
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 3.66 ug/minute C % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	1.80	100.00
3	1.50	35.90	94.99
4	2.00	160.30	77.60
5	2.50	262.90	39.03
6	3.00	300.40	12.48
7	3.50	313.20	4.09
8	4.00	317.10	1.23
9	4.50	318.60	0.47
10	5.00	319.60	0.31
11	5.50	320.20	0.19
12	6.00	320.80	0.19
13	6.50	321.20	0.12
14	7.00	321.50	0.09
15	7.50	321.90	0.12
16	8.00	322.10	0.06
17	8.50	322.40	0.09
18	9.00	322.50	0.03
19	9.50	322.70	0.06
20	10.00	323.00	0.09
21	10.50	323.20	0.06
22	11.00	323.50	0.09

USER INPUT BLANK VALUE

BLANK VALUE = 40.26246 micrograms carbon

BLANK FACTOR = 40.26246 / 11.00067 = +3.7E+00 ug/min Carbon

SAMPLE RESULTS:

(323.5 - 40.26603) (1)/(1) = +2.832E+02 g/L Carbon
(323.5 - 40.26603) (1)/(1) (12) = +2.360E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

267

SS : .2337₉

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005132SAM Date: 12/23/96 Time: 14:01:59

Sample Size = 1 uL Analyst : DP BROMLEY
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .45 ug/minute C % Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.90	0.00
2	1.01	1.20	25.00
3	1.51	3.90	69.23
4	2.00	13.40	70.90
5	2.51	28.00	52.14
6	3.01	40.20	30.35
7	3.50	46.20	12.99
8	4.00	48.90	5.52
9	4.50	50.10	2.40
10	5.00	50.50	0.79
11	5.50	50.80	0.59
12	6.00	50.90	0.20
13	6.50	51.10	0.39
14	7.00	51.20	0.20
15	7.50	51.30	0.19
16	8.00	51.40	0.19
17	8.50	51.50	0.19
18	9.00	51.70	0.39
19	9.50	51.80	0.19
20	10.00	51.90	0.19
21	10.50	52.00	0.19
22	11.00	52.20	0.38

USER INPUT BLANK VALUE

BLANK VALUE = 4.950302 micrograms carbon

BLANK FACTOR = 4.950302 / 11.00067 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(52.2 - 4.950302) (1)/(1) = +4.72E+01 g/L Carbon
(52.2 - 4.950302) (1)/(1) (12) = +3.94E+00 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXX

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: ~~S96T005131SAM~~ *S96T005132SAM* Date: 12/23/96 Time: 14:17:07
0% 2/23/96
Sample Size = 1 uL Analyst : DP BROMLEY
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 3.66 ug/minute C % Difference = 10

== Reading ==	Analysis	Time	==== Coulometer ==	% Difference ==
1	0.51		0.40	0.00
2	1.01		1.60	75.00
3	1.51		12.00	86.67
4	2.00		32.00	62.50
5	2.50		48.40	33.88
6	3.00		55.50	12.79
7	3.50		57.90	4.15
8	4.00		59.10	2.03
9	4.50		60.00	1.50
10	5.00		60.40	0.66
11	5.50		60.80	0.66
12	6.00		61.20	0.65
13	6.50		61.70	0.81
14	7.00		61.90	0.32
15	7.50		62.10	0.32
16	8.00		62.20	0.16
17	8.50		62.50	0.48
18	9.00		62.70	0.32
19	9.50		62.90	0.32
20	10.00		62.90	0.00
21	10.50		63.10	0.32
22	11.00		63.30	0.32

USER INPUT BLANK VALUE

BLANK VALUE = 40.26246 micrograms carbon

BLANK FACTOR = 40.26246 / 11.00067 = +3.7E+00 ug/min Carbon

SAMPLE RESULTS:

(63.3 - 40.25598) (1)/(1) = +2.30E+01 g/L Carbon
(63.3 - 40.25598) (1)/(1) (12) = +1.92E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

SS : .2357g

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005132DUP

Date: 12/23/96

Time: 14:32:35

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .45 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	0.80	25.00
3	1.51	2.90	72.41
4	2.00	10.60	72.64
5	2.50	23.10	54.11
6	3.00	35.00	34.00
7	3.50	43.20	18.98
8	4.00	48.10	10.19
9	4.50	50.10	3.99
10	5.00	50.90	1.57
11	5.50	51.50	1.17
12	6.00	51.70	0.39
13	6.50	51.90	0.39
14	7.00	51.90	0.00
15	7.50	52.10	0.38
16	8.00	52.20	0.19
17	8.50	52.50	0.57
18	9.00	52.50	0.00
19	9.50	52.60	0.19
20	10.00	52.80	0.38
21	10.50	52.90	0.19
22	11.00	53.10	0.38

USER INPUT BLANK VALUE

BLANK VALUE = 4.950302 micrograms carbon

BLANK FACTOR = 4.950302 / 11.00067 = +4.5E-01 ug/min Carbon

SAMPLE RESULTS:

(53.1 - 4.950274) (1)/(1) = +4.81E+01 g/L Carbon
(53.1 - 4.950274) (1)/(1) (12) = +4.01E+00 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXX

SS: .2357g

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005132DUP Date: 12/23/96 Time: 14:47:50

Sample Size = 1 uL Analyst : DP BROMLEY
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 3.66 ug/minute C % Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	1.10	81.82
3	1.51	7.80	85.90
4	2.01	23.70	67.09
5	2.51	42.50	44.24
6	3.01	53.00	19.81
7	3.51	57.30	7.50
8	4.01	59.20	3.21
9	4.51	60.20	1.66
10	5.00	60.70	0.82
11	5.50	61.20	0.82
12	6.00	61.70	0.81
13	6.50	61.90	0.32
14	7.00	62.20	0.48
15	7.50	62.40	0.32
16	8.00	62.70	0.48
17	8.50	63.00	0.48
18	9.00	63.20	0.32
19	9.50	63.30	0.16
20	10.00	63.50	0.31
21	10.50	63.60	0.16
22	11.00	63.80	0.31

USER INPUT BLANK VALUE

BLANK VALUE = 40.26246 micrograms carbon

BLANK FACTOR = 40.26246 / 11.00067 = +3.7E+00 ug/min Carbon

SAMPLE RESULTS:

(63.8 - 40.26559) (1)/(1) = +2.35E+01 g/L Carbon
(63.8 - 40.26559) (1)/(1) (12) = +1.96E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXXX

271

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
BLNK	Sample Size in g (SS)	0.0000	0.0000
	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	5	27.6
13862	µg of Carbon from Baseline (C2)	4.9	40.3

@TICTOC1

SOLID

96010379

0

N/A

BLANK

CARB2

RCJ

Chem

RWS

Arch

DPB

12/23/96

12/23/96

µg of Carbon = |C1-C2|

		TIC	TOC
05:00 PM	Method Detection Limit in ug/g	5	40
B-109	µg of Carbon	1.00E-01	1.27E+01

Data Entered By:	RCJ	Date:	12/23/96
Signature of Chemist:	<i>[Signature]</i>	Date:	12/26/96

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
STD	Sample Size in mL (SS)	1.0000	0.2000
	Dilution Factor (DF)	1	1
	Final Coulometer Reading in µg (C1)	600.6	584.2
13862	µg of Carbon from Baseline (C2)	4.9	40.3
@TICTOC1	Standard Book Number	22N12F	24N12F
	Standard Value (µg/ml)	602	3000

LIQUID
96010379
0
N/A
STANDARD
CARB2
RCJ
RWS
DPB
12/23/96
12/23/96
05:00 PM
B-109

QC Actual in µg/mL = Standard Value (µg/mL)

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

	TIC	TOC
Method Detection Limit in µg/mL	5	40
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	5.96E+02	2.72E+03
Percent Standard Recovery	99.0	90.7

Data Entered By:

Signature of Chemist:

RCJ

Date: 12/23/96

Date: 12/24/96

STANDARD.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
SAMPLE	Sample Size in g (SS)	0.1276	0.1276
	Dilution Factor (DF)	1	1
13862	µg of Carbon in Sample (C1)	70.9	50.3
	µg of Carbon from Baseline (C2)	4.9	40.3
@TICTOC1			
SOLID			
96010379			
0	µg of Carbon/g = (C1-C2) * DF / SS		
	µg of Carbon/g for TIC = 5 if C1 < C2		
	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
S96T005131			
CARB2			
RCJ			
RWS			
DPB			
12/23/96			
12/23/96			
Method Detection Limit in µg/g		5	40
05:00 PM			
µg of Carbon/g		5.17E+02	7.84E+01
B-109			

Data Entered By:	RCJ	Date:	12/23/96
Signature of Chemist:	<i>John M. Chisley</i>	Date:	12/24/96

SAMPLE.WB1 REV 1.0

342100ML

274

WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
DUP	Sample Size in g (SS)	0.1572	0.1572
	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	81.8	50.5
13862	µg of Carbon from Baseline (C2)	4.9	40.3
@TICTOC1	Known µg of C from Original Sample	5.17E+2	7.84E+1
SOLID			
96010379			
0	µg of Carbon/g = (C1-C2) * DF / SS		
N/A	µg of Carbon/g for TIC = 5 if C1 < C2		
S96T005131	µg of Carbon/g for TOC = 40 if C1 < C2		
CARB2			
RCJ			
Chemist			
RWS			
Analyst			
DPB			
12/23/96			
12/23/96			
05:00 PM	Method Detection Limit in ug/g	5	40
B-109	µg of Carbon/g	4.89E+02	6.49E+01

Data Entered By:	RCJ	Date:	12/23/96
Signature of Chemist:	<i>John M. Chaskey</i>	Date:	12/26/96

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SPIKES

TIC/TOC : LA-342-100 (E-0)

SOLIDS

SPK	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.1276	0.1276
13862	Final Coulometer Reading in µg (C1)	70.9	50.3
@TICTOC1	Spiked Vial Data		
	Sample Size in g (SPK SS)	0.1101	0.1101
	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
	Final Coulometer Reading in µg (C2)	358.3	323.5
SOLID	Spike Book Number	22N12F	24N12F
96010379	Spike Standard Value in µg/mL (SPK CONC)	602	3000
0			
N/A			
S96T005131	Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100$		
CARB2	QC Actual in µg/mL = Spike Value (µg/mL)		
	QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100		
RCJ			
RWS			
DPB			
12/23/96			
12/23/96			
05:00 PM			
B-109			
		TIC	TOC
	QC Actual in µg/mL	6.02E+02	3.00E+03
	QC Found in µg/mL	5.94E+02	2.80E+03
	Percent Spike Recovery	98.7	93.4

11/9/97

Data Entered By:	RCJ	Date:	12/23/96
Signature of Chemist:	<i>John McCloud</i>	Date:	12/26/96

SPIKE.WB1 REV 1.1

342100ML

276

WORKBOOK PAGE: SAM6

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Sample Size in g	(SS)	0.2337	0.2337
Dilution Factor	(DF)	1	1
µg of Carbon in Sample	(C1)	52.2	63.3
µg of Carbon from Baseline	(C2)	4.9	40.3
Test Code			
@TICTOC1			

Matrix
SOLID
Batch Number
96010379
Reactor
0
Sample Prep
N/A
Sample ID
S96T005132
Instrument
CARB2
Prep Location
RCJ
Chemist
RWS
Analyst
DPB
Date Complete
12/23/96
Analysis Date
12/23/96
Analysis Time
05:00 PM
Sample ID
B-109

µg of Carbon/g = (C1-C2) * DF / SS
 µg of Carbon/g for TIC = 5 if C1 < C2
 µg of Carbon/g for TOC = 40 if C1 < C2

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon/g	2.02E+02	9.84E+01

Data Entered By:	RCJ	Date:	12/23/96
Signature of Chemist:	<i>John McChesney</i>	Date:	12/24/96

SAMPLE WB1 REV 1.0

342100ML

277

WORKBOOK PAGE: DUP7

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.2357	0.2357
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	53.1	63.8
13862	µg of Carbon from Baseline (C2)	4.9	40.3
Test 5990	Known µg of C from Original Sample	2.02E+2	9.84E+1
@TICTOC1			
Matrix			
SOLID			
Sample Name			
96010379			
Ref No			
0			
Sample Prep			
N/A			
Sample			
S96T005132			
Instrument Code			
CARB2			
Prep Lab			
RCJ			
Chemist			
RWS			
Analyst			
DPB			
Date of Test			
12/23/96			
Analysis			
12/23/96			
Analysis Time	Method Detection Limit in ug/g	5	40
05:00 PM			
Sample	µg of Carbon/g	2.04E+02	9.97E+01
B-109			

µg of Carbon/g = (C1-C2) * DF / SS
 µg of Carbon/g for TIC = 5 if C1 < C2
 µg of Carbon/g for TOC = 40 if C1 < C2

Data Entered By:	RCJ	Date:	12/23/96
Signature of Chemist:	<i>John McCluskey</i>	Date:	12/26/96

SAMPLE WB1 REV 1.0

342100ML

LABCORE Completed Worklist Report for Worklist# 13863

Analyst: dpb

Instrument: CARB2

Book# TIC {22N12F Std
TOC {24N12F Spk

Method: LA-342-100 Rev/Mod E-0

Worklist Comment: B-109 TIC/TOC, RCJ

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	SOLID	1	1.40E+0	1.400	ug/g
1 BLNK	0		@TICTOC1 TOC-02	SOLID	1	5.70E+0	5.700	ug/g
2 STD	0		@TICTOC1 TIC-02	SOLID	6.02E+02	6.05E+2	100.498 % Recovery	
2 STD	0		@TICTOC1 TOC-02	SOLID	3.00E+03	2.75E+3	91.667 % Recovery	
3 SAMPLE	S96T005135	0	@TICTOC1 TIC-02	SOLID	N/A	3.37E+02	5.000	ug/g
3 SAMPLE	S96T005135	0	@TICTOC1 TOC-02	SOLID	N/A	1.77E+02	40.000	ug/g
4 DUP	S96T005135	0	@TICTOC1 TIC-02	SOLID	3.37E+2	3.59E+2	6.322 RPD	
4 DUP	S96T005135	0	@TICTOC1 TOC-02	SOLID	1.77E+2	1.95E+2	9.677 RPD	
5 SPK	S96T005135	0	@TICTOC1 TIC-02	SOLID	1.00E+02	1.04E+02	104.000 % Recovery	
5 SPK	S96T005135	0	@TICTOC1 TOC-02	SOLID	1.00E+02	9.47E+01	94.700 % Recovery	
6 SAMPLE	S96T005136	0	@TICTOC1 TIC-02	SOLID	N/A	2.40E+02	5.000	ug/g
6 SAMPLE	S96T005136	0	@TICTOC1 TOC-02	SOLID	N/A	1.50E+02	40.000	ug/g
7 DUP	S96T005136	0	@TICTOC1 TIC-02	SOLID	2.40E+2	2.64E+2	9.524 RPD	
7 DUP	S96T005136	0	@TICTOC1 TOC-02	SOLID	1.50E+2	2.09E+2	32.869 RPD	
8 SPK	S96T005136	0	@TICTOC1 TIC-02	SOLID	1.00E+02	1.15E+02	115.000 % Recovery	
8 SPK	S96T005136	0	@TICTOC1 TOC-02	SOLID	1.00E+02	1.08E+02	108.000 % Recovery	

Final page for worklist# 13863

See attached
Analyst Signature _____ Date _____

See attached
Analyst Signature _____ Date _____

Validated into Labcore by John McCluskey 01/06/97
Reviewed Signature _____ Date _____

* Note: The failed RPD for S96T005136 Dup TOC analysis was accepted because the TOC amt for both sam & dup was so near the baseline that a small variance yields a large RPD. JMM 01/06/97

LABCORE Data Entry Template for Worklist# 13863

Analyst: DPB Instrument: CARB2 Book# 22N12-F/24N12-F

Method: LA-342-100 Rev/Mod E-0

Worklist Comment: B-109 TICTOC. RCJ

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	SOLID		
2 STD			@TICTOC1	SOLID		
3 SAMPLE	S96T005135 0		@TICTOC1	SOLID	96001238	B-109
	Analytes Requested: TIC-02 , TOC-02					
4 DUP	S96T005135 0		@TICTOC1	SOLID		
5 SPK	S96T005135 0		@TICTOC1	SOLID		
6 SAMPLE	S96T005136 0		@TICTOC1	SOLID	96001238	B-109
	Analytes Requested: TIC-02 , TOC-02					
7 DUP	S96T005136 0		@TICTOC1	SOLID		
8 SPK	S96T005136 0		@TICTOC1	SOLID		

Final page for worklist # 13863

David P. Beatty 1/4/97 0445
Analyst Signature Date

Frank Mack 1/4/97
Analyst Signature Date

Data Entry Comments:

X

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BASE1

Date: 01/03/97

Time: 19:49:58

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE1
Blank Value = N/A

Analyst : DP BROMLEY
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.40	0.00
2	1.01	0.80	50.00
3	1.51	1.30	38.46
4	2.01	1.70	23.53
5	2.51	2.20	22.73
6	3.01	2.60	15.38
7	3.50	3.10	16.13
8	4.00	3.50	11.43
9	4.50	4.00	12.50
10	5.00	4.30	6.98
11	5.50	4.80	10.42
12	6.00	5.20	7.69
13	6.50	5.60	7.14
14	7.00	6.00	6.67
15	7.50	6.40	6.25
16	8.00	6.70	4.48
17	8.50	7.10	5.63
18	9.00	7.40	4.05
19	9.50	7.80	5.13
20	10.00	8.30	6.02
21	10.50	8.60	3.49
22	11.00	9.00	4.44

BLANK VALUE = 9 micrograms carbon
BLANK FACTOR = 9 / 10.99878 =

+8.2E-01 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 281 TO 307

Sample Run By:

John McCluskey for dph
DP BROMLEY XXXXX
01/08/97

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0
 <<< BLANK ANALYSIS >>>

Sample: BASE1

Date: 01/03/97

Time: 21:30:42

Sample Size = 1 uL
 Dil Factor = 1
 Blank ID # = BASE1
 Blank Value = N/A

Analyst : DP BROMLEY
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

-- Reading	==== Analysis Time	==== Coulometer	==== % Difference
1	0.51	0.40	0.00
2	1.01	0.90	55.56
3	1.51	1.50	40.00
4	2.00	4.10	63.41
5	2.50	7.70	46.75
6	3.00	11.40	32.46
7	3.50	14.10	19.15
8	4.00	15.40	8.44
9	4.50	16.30	5.52
10	5.00	17.40	6.32
11	5.50	18.30	4.92
12	6.00	19.20	4.69
13	6.50	20.10	4.48
14	7.00	20.80	3.37
15	7.50	21.40	2.80
16	8.00	22.10	3.17
17	8.50	22.70	2.64
18	9.00	23.30	2.58
19	9.50	24.00	2.92
20	10.00	24.30	1.23
21	10.50	24.90	2.41
22	11.00	25.40	1.97

BLANK VALUE = 25.4 micrograms carbon

BLANK FACTOR = 25.4 / 11.00073 = +2.31E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 22N12-F

Date: 01/03/97

Time: 21:47:44

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .82 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference
1	0.51	0.50	0.00
2	1.01	1.00	50.00
3	1.51	8.20	87.80
4	2.00	80.20	89.78
5	2.50	200.00	59.90
6	3.00	331.40	39.65
7	3.50	438.40	24.41
8	4.00	511.50	14.29
9	4.50	559.00	8.50
10	5.00	585.90	4.59
11	5.50	599.30	2.24
12	6.00	605.50	1.02
13	6.50	608.20	0.44
14	7.00	609.90	0.28
15	7.50	610.80	0.15
16	8.00	611.40	0.10
17	8.50	612.00	0.10
18	9.00	612.50	0.08
19	9.50	612.90	0.07
20	10.00	613.30	0.07
21	10.50	613.70	0.07
22	11.00	614.20	0.08

USER INPUT BLANK VALUE

BLANK VALUE = 9.0206 micrograms carbon

BLANK FACTOR = 9.0206 / 11.00073 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:

(614.2 - 9.0204) (1)/(1) = +6.052E+02 g/L Carbon
 (614.2 - 9.0204) (1)/(1)(12) = +5.043E+01 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXX

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD 24N12-F

Date: 01/03/97

Time: 22:04:33

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.31 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference
1	0.51	0.30	0.00
2	1.01	0.70	57.14
3	1.51	4.40	84.09
4	2.01	41.40	89.37
5	2.51	163.40	74.66
6	3.00	356.40	54.15
7	3.50	482.80	26.18
8	4.00	538.00	10.26
9	4.50	558.00	3.58
10	5.00	565.20	1.27
11	5.50	567.80	0.46
12	6.00	569.10	0.23
13	6.50	570.00	0.16
14	7.00	571.20	0.21
15	7.50	572.10	0.16
16	8.00	572.90	0.14
17	8.50	573.50	0.10
18	9.00	574.10	0.10
19	9.50	574.80	0.12
20	10.00	575.30	0.09
21	10.50	575.70	0.07
22	11.00	576.10	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 25.41169 micrograms carbon

BLANK FACTOR = 25.41169 / 11.00073 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(576.1 - 25.41141) (1)/(1) = +5.507E+02 g/L Carbon
(576.1 - 25.41141) (1)/(1) (12) = +4.589E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

HMF
~~WHC~~ SD-WM-DP-201, REV. 1
 TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0

Sample: BLK1

Date: 01/03/97

Time: 22:32:24

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .82 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.80	50.00
3	1.50	1.10	27.27
4	2.00	1.50	26.67
5	2.50	1.90	21.05
6	3.00	2.20	13.64
7	3.50	2.70	18.52
8	4.00	3.10	12.90
9	4.50	3.50	11.43
10	5.00	3.80	7.89
11	5.50	4.10	7.32
12	6.00	4.40	6.82
13	6.50	4.80	8.33
14	7.00	5.00	4.00
15	7.50	5.50	9.09
16	8.00	5.70	3.51
17	8.50	6.00	5.00
18	9.00	6.40	6.25
19	9.50	6.70	4.48
20	10.00	6.90	2.90
21	10.50	7.30	5.48
22	11.00	7.60	3.95

USER INPUT BLANK VALUE

BLANK VALUE = 9.0206 micrograms carbon

BLANK FACTOR = 9.0206 / 11.00073 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:

(7.6 - 9.0197) (1)/(1) = < 5.00 E-3 g/L Carbon
 (7.6 - 9.0197) (1)/(1) (12) = < 4.17 E-4 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXX

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0

Sample: BLK1

Date: 01/03/97

Time: 22:45:29

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.31 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.50	0.00
2	1.01	0.80	37.50
3	1.50	2.10	61.90
4	2.00	5.80	63.79
5	2.50	9.50	38.95
6	3.00	11.40	16.67
7	3.50	12.50	8.80
8	4.00	13.30	6.02
9	4.50	14.20	6.34
10	5.00	14.90	4.70
11	5.50	15.50	3.87
12	6.00	16.00	3.13
13	6.50	16.40	2.44
14	7.00	16.90	2.96
15	7.50	17.30	2.31
16	8.00	17.60	1.70
17	8.50	18.00	2.22
18	9.00	18.30	1.64
19	9.50	18.70	2.14
20	10.00	19.10	2.09
21	10.50	19.40	1.55
22	11.00	19.70	1.52

USER INPUT BLANK VALUE

BLANK VALUE = 25.41169 micrograms carbon

BLANK FACTOR = 25.41169 / 11.00073 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(19.7 - 25.40323) (1)/(1) = < 5.00 E-3 g/L Carbon
 (19.7 - 25.40323) (1)/(1) (12) = < 4.17 E-4 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0

Sample: S96T005135SAM

Date: 01/03/97

Time: 23:06:20

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .82 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	0.70	28.57
3	1.51	1.90	63.16
4	2.01	5.60	66.07
5	2.51	11.00	49.09
6	3.01	18.40	40.22
7	3.51	26.60	30.83
8	4.00	34.00	21.76
9	4.50	41.00	17.07
10	5.00	45.90	10.68
11	5.50	49.80	7.83
12	6.00	52.60	5.32
13	6.50	54.70	3.84
14	7.00	56.70	3.53
15	7.50	58.10	2.41
16	8.00	59.80	2.84
17	8.50	61.20	2.29
18	9.00	62.20	1.61
19	9.50	63.50	2.05
20	10.00	64.70	1.85
21	10.50	65.80	1.67
22	11.00	66.80	1.50

USER INPUT BLANK VALUE

BLANK VALUE = 9.0206 micrograms carbon

BLANK FACTOR = 9.0206 / 11.00073 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:

(66.8 - 9.0205) (1)/(1) = +5.78E+01 g/L Carbon
 (66.8 - 9.0205) (1)/(1) (12) = +4.81E+00 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXXX

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005135SAM

Date: 01/03/97

Time: 23:20:07

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.31 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	1.60	43.75
3	1.50	2.90	44.83
4	2.00	7.80	62.82
5	2.50	20.40	61.76
6	3.00	33.10	38.37
7	3.50	40.00	17.25
8	4.00	43.80	8.68
9	4.50	45.60	3.95
10	5.00	47.10	3.18
11	5.50	48.20	2.28
12	6.00	49.40	2.43
13	6.50	50.10	1.40
14	7.00	50.90	1.57
15	7.50	51.50	1.17
16	8.00	52.20	1.34
17	8.50	52.90	1.32
18	9.00	53.50	1.12
19	9.50	54.10	1.11
20	10.00	54.60	0.92
21	10.50	55.30	1.27
22	11.00	55.80	0.90

USER INPUT BLANK VALUE

BLANK VALUE = 25.41169 micrograms carbon

BLANK FACTOR = 25.41169 / 11.00073 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(55.8 - 25.41141) (1)/(1) = +3.04E+01 g/L Carbon
(55.8 - 25.41141) (1)/(1) (12) = +2.53E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0

Sample: S96T005135DUP

Date: 01/03/97

Time: 23:34:20

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .82 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	1.00	70.00
3	1.51	2.30	56.52
4	2.00	6.00	61.67
5	2.50	11.10	45.95
6	3.00	18.00	38.33
7	3.50	26.10	31.03
8	4.00	33.70	22.55
9	4.50	39.60	14.90
10	5.00	44.50	11.01
11	5.50	48.00	7.29
12	6.00	50.70	5.33
13	6.50	53.00	4.34
14	7.00	55.00	3.64
15	7.50	56.60	2.83
16	8.00	58.00	2.41
17	8.50	59.70	2.85
18	9.00	61.10	2.29
19	9.50	62.20	1.77
20	10.00	63.40	1.89
21	10.50	64.70	2.01
22	11.00	65.70	1.52

USER INPUT BLANK VALUE

BLANK VALUE = 9.0206 micrograms carbon

BLANK FACTOR = 9.0206 / 11.00073 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:

(65.7 - 9.0206) (1)/(1) =

+5.67E+01 g/L Carbon

(65.7 - 9.0206) (1)/(1) (12) =

+4.72E+00 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXX

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005135DUP Date: 01/03/97 Time: 23:48:24

Sample Size = 1 uL	Analyst : DP BROMLEY
Dil Factor = 1	Min Readings = 22
Blank ID # =	Max Readings = 22
Blank Value = 2.31 ug/minute C	% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	1.30	0.00
2	1.01	2.30	43.48
3	1.50	3.20	28.13
4	2.00	7.30	56.16
5	2.50	17.70	58.76
6	3.00	30.20	41.39
7	3.50	38.50	21.56
8	4.00	42.40	9.20
9	4.50	44.60	4.93
10	5.00	46.10	3.25
11	5.50	47.30	2.54
12	6.00	48.30	2.07
13	6.50	49.50	2.42
14	7.00	50.30	1.59
15	7.50	51.10	1.57
16	8.00	51.90	1.54
17	8.50	52.90	1.89
18	9.00	53.40	0.94
19	9.50	54.10	1.29
20	10.00	54.90	1.46
21	10.50	55.50	1.08
22	11.00	56.20	1.25

USER INPUT BLANK VALUE

BLANK VALUE = 25.41169 micrograms carbon

BLANK FACTOR = 25.41169 / 11.00073 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(56.2 - 25.40492) (1)/(1) = +3.08E+01 g/L Carbon
(56.2 - 25.40492) (1)/(1) (12) = +2.57E+00 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

HWF SS : .1572 g
 SD-WM-DP-201, REV. 1 .5 mL STD 22N/2-F

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0

Sample: S96T005135SPK

Date: 01/04/97

Time: 00:01:36

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .82 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	1.40	64.29
3	1.51	5.50	74.55
4	2.01	38.90	85.86
5	2.51	103.70	62.49
6	3.01	178.80	42.00
7	3.51	243.40	26.54
8	4.00	288.60	15.66
9	4.50	321.60	10.26
10	5.00	340.80	5.63
11	5.50	351.60	3.07
12	6.00	357.80	1.73
13	6.50	361.00	0.89
14	7.00	363.20	0.61
15	7.50	365.10	0.52
16	8.00	366.60	0.41
17	8.50	368.20	0.43
18	9.00	369.40	0.32
19	9.50	370.70	0.35
20	%-1430.00	372.00	0.35
21	%-1429.50	373.00	0.27
22	%-1429.00	374.20	0.32

USER INPUT BLANK VALUE

BLANK VALUE = 9.0206 micrograms carbon

BLANK FACTOR = 9.0206 / 11.00073 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:

(374.2 --1171.779) (1)/(1) = +1.546E+03 g/L Carbon
 (374.2 --1171.779) (1)/(1) (12) = +1.288E+02 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXXX

HNF
WHC-SD-WM-DP-201, REV. 1
TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

SS: .1512 g
.1 mL STD 24N12-F

Sample: S96T005135SPK

Date: 01/04/97

Time: 01:14:14

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.31 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.20	0.00
2	1.01	2.10	42.86
3	1.51	5.60	62.50
4	2.01	30.80	81.82
5	2.51	115.90	73.43
6	3.01	222.70	47.96
7	3.50	284.20	21.64
8	4.00	310.20	8.38
9	4.50	319.70	2.97
10	5.00	323.60	1.21
11	5.50	325.40	0.55
12	6.00	326.70	0.40
13	6.50	327.80	0.34
14	7.00	328.90	0.33
15	7.50	329.70	0.24
16	8.00	330.60	0.27
17	8.50	331.50	0.27
18	9.00	332.30	0.24
19	9.50	333.10	0.24
20	10.00	333.90	0.24
21	10.50	334.70	0.24
22	11.00	335.30	0.18

USER INPUT BLANK VALUE

BLANK VALUE = 25.41169 micrograms carbon

BLANK FACTOR = 25.41169 / 11.00073 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(335.3 - 25.40499) (1)/(1) = +3.099E+02 g/L Carbon
(335.3 - 25.40499) (1)/(1) (12) = +2.582E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005136SAM

Date: 01/04/97

Time: 01:31:19

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .82 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.10	63.64
3	1.50	2.50	56.00
4	2.00	4.40	43.18
5	2.50	7.90	44.30
6	3.00	12.10	34.71
7	3.50	16.10	24.84
8	4.00	19.90	19.10
9	4.50	22.70	12.33
10	5.00	25.40	10.63
11	5.50	27.40	7.30
12	6.00	29.50	7.12
13	6.50	30.50	3.28
14	7.00	31.60	3.48
15	7.50	33.10	4.53
16	8.00	33.80	2.07
17	8.50	34.70	2.59
18	9.00	35.90	3.34
19	9.50	36.50	1.64
20	10.00	37.30	2.14
21	10.50	38.30	2.61
22	11.00	39.00	1.79

USER INPUT BLANK VALUE

BLANK VALUE = 9.0206 micrograms carbon

BLANK FACTOR = 9.0206 / 11.00073 =

+8.2E-01 ug/min Carbon

SAMPLE RESULTS:

(39 - 9.019043) (1)/(1) =

+3.00E+01 g/L Carbon

(39 - 9.019043) (1)/(1) (12) =

+2.50E+00 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXXX

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005136SAM

Date: 01/04/97

Time: 01:43:45

Sample Size = 1 uL

Analyst : DP BROMLEY

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.31 ug/minute C

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	1.40	57.14
3	1.51	2.90	51.72
4	2.01	8.20	64.63
5	2.50	19.30	57.51
6	3.00	27.30	29.30
7	3.50	31.30	12.78
8	4.00	33.30	6.01
9	4.50	34.90	4.58
10	5.00	36.30	3.86
11	5.50	37.30	2.68
12	6.00	38.00	1.84
13	6.50	38.70	1.81
14	7.00	39.60	2.27
15	7.50	40.30	1.74
16	8.00	40.70	0.98
17	8.50	41.60	2.16
18	9.00	42.00	0.95
19	9.50	42.70	1.64
20	10.00	43.30	1.39
21	10.50	43.60	0.69
22	11.00	44.20	1.36

USER INPUT BLANK VALUE

BLANK VALUE = 25.41169 micrograms carbon

BLANK FACTOR = 25.41169 / 11.00073 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(44.2 - 25.40924) (1)/(1) = +1.88E+01 g/L Carbon
(44.2 - 25.40924) (1)/(1) (12) = +1.57E+00 Molar Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005136DUP

Date: 01/04/97

Time: 01:57:40

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .82 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.50	73.33
3	1.50	2.80	46.43
4	2.00	6.40	56.25
5	2.50	11.90	46.22
6	3.00	17.80	33.15
7	3.50	24.50	27.35
8	4.00	32.00	23.44
9	4.50	37.80	15.34
10	5.00	41.40	8.70
11	5.50	45.00	8.00
12	6.00	47.10	4.46
13	6.50	49.20	4.27
14	7.00	51.40	4.28
15	7.50	53.30	3.56
16	8.00	54.90	2.91
17	8.50	56.30	2.49
18	9.00	57.70	2.43
19	9.50	58.60	1.54
20	10.00	59.90	2.17
21	10.50	61.40	2.44
22	11.00	62.30	1.44

USER INPUT BLANK VALUE

BLANK VALUE = 9.0206 micrograms carbon

BLANK FACTOR = 9.0206 / 11.00073 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:

(62.3 - 9.021233) (1)/(1) = +5.33E+01 g/L Carbon
(62.3 - 9.021233) (1)/(1) (12) = +4.44E+00 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXXX

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005136DUP

Date: 01/04/97

Time: 02:10:48

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.31 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	1.50	0.00
2	1.01	2.60	42.31
3	1.50	4.40	40.91
4	2.00	10.70	58.88
5	2.50	26.90	60.22
6	3.00	40.20	33.08
7	3.50	49.80	19.28
8	4.00	52.90	5.86
9	4.50	55.20	4.17
10	5.00	57.50	4.00
11	5.50	58.40	1.54
12	6.00	59.70	2.18
13	6.50	60.60	1.49
14	7.00	61.40	1.30
15	7.50	62.70	2.07
16	8.00	63.20	0.79
17	8.50	64.20	1.56
18	9.00	64.70	0.77
19	9.50	65.80	1.67
20	10.00	66.40	0.90
21	10.50	67.10	1.04
22	11.00	67.70	0.89

USER INPUT BLANK VALUE

BLANK VALUE = 25.41169 micrograms carbon

BLANK FACTOR = 25.41169 / 11.00073 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(67.7 - 25.4073) (1)/(1) =

+4.23E+01 g/L Carbon

(67.7 - 25.4073) (1)/(1) (12) =

+3.52E+00 Molar Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005136SPK

Date: 01/04/97

Time: 03:04:10

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .82 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	15.00	0.00
2	1.01	20.70	27.54
3	1.51	25.70	19.46
4	2.00	61.30	58.08
5	2.50	127.30	51.85
6	3.00	202.00	36.98
7	3.50	264.40	23.60
8	4.00	310.90	14.96
9	4.50	339.10	8.32
10	5.00	355.00	4.48
11	5.50	365.10	2.77
12	6.00	370.40	1.43
13	6.50	374.80	1.17
14	7.00	378.60	1.00
15	7.50	381.40	0.73
16	8.00	385.20	0.99
17	8.50	388.40	0.82
18	9.00	392.00	0.92
19	9.50	395.80	0.96
20	10.00	399.50	0.93
21	10.50	403.50	0.99
22	11.00	407.20	0.91

USER INPUT BLANK VALUE

BLANK VALUE = 9.0206 micrograms carbon

BLANK FACTOR = 9.0206 / 11.00073 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:

(407.2 - 9.019036) (1)/(1) = +3.982E+02 g/L Carbon
(407.2 - 9.019036) (1)/(1) (12) = +3.318E+01 Molar Carbon

Sample Run By:

DP BROMLEY

XXXXX

HUF
WHG-SD-WM-DP-201, REV. 1
TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

SD: 12002-9
1 m2 STD 24N12-F

Sample: S96T005136SPK

Date: 01/04/97

Time: 04:11:05

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.31 ug/minute C

Analyst : DP BROMLEY

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	1.50	0.00
2	1.01	5.40	72.22
3	1.51	11.00	50.91
4	2.00	29.00	62.07
5	2.50	109.60	73.54
6	3.00	213.00	48.54
7	3.50	271.50	21.55
8	4.00	301.80	10.04
9	4.50	322.60	6.45
10	5.00	340.50	5.26
11	5.50	355.80	4.30
12	6.00	369.00	3.58
13	6.50	379.50	2.77
14	7.00	386.30	1.76
15	7.50	388.90	0.67
16	8.00	390.40	0.38
17	8.50	391.50	0.28
18	9.00	392.10	0.15
19	9.50	392.60	0.13
20	10.00	393.20	0.15
21	10.50	393.60	0.10
22	11.00	393.80	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 25.41169 micrograms carbon

BLANK FACTOR = 25.41169 / 11.00073 = +2.3E+00 ug/min Carbon

SAMPLE RESULTS:

(393.8 - 25.40965) (1)/(1) = +3.684E+02 g/L Carbon
(393.8 - 25.40965) (1)/(1) (12) = +3.070E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DP BROMLEY

XXXXX

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
	Sample Size in g (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	7.6	19.7
13863	µg of Carbon from Baseline (C2)	9	25.4

@TICTOC1

SOLID

96010381

0

N/A

CARB2

LCM

RWS

DPB

01/04/97

01/04/97

04:45 AM

B-109

µg of Carbon = |C1-C2|

Method Detection Limit in ug/g

µg of Carbon

TIC

TOC

5

40

1.40E+00

5.70E+00

Data Entered By:

LCM

Date:

01/04/97

Signature of Chemist:

Date:

01/06/97

BLANK.WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
STD	Sample Size in mL (SS)	1.0000	0.2000
	Dilution Factor (DF)		
	Final Coulometer Reading in µg (C1)	614.2	576.1
13863	µg of Carbon from Baseline (C2)		25.4
	Standard Book Number	22N12F	24N12F
@TICTOC1	Standard Value (µg/ml)	602	3000

LIQUID
96010381
0
N/A
CARB2
LCM
RWS
DGB
01/04/97
01/04/97
04/01/AM
B-100

QC Actual in µg/mL = Standard Value (µg/mL)

QC Found in µg/mL = (C1 - C2) * DF / SS

QC Found in µg/mL for TIC = 5 if C1 < C2

QC Found in µg/mL for TOC = 40 if C1 < C2

% Recovery = QC Found / QC Actual * 100

Method Detection Limit in µg/mL

QC Actual in µg/mL

QC Found in µg/mL

Percent Standard Recovery

TIC	TOC
5	40
6.02E+02	3.00E+03
6.05E+02	2.75E+03
100.5	91.8

Data Entered By:

Signature of Chemist:

STANDARD.WB1 REV 1.0

342100LM

LCM

Date: 01/04/97

Date: 01/04/97

300

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (E-0)

SOLIDS

TIC/TOC : LA-342-100 (E-0)		SOLIDS	TIC	TOC
	Sample Size in g	(SS)	0.1716	0.1716
SAMPLE	Dilution Factor	(DF)	1	1
	µg of Carbon in Sample	(C1)	66.8	55.8
13863	µg of Carbon from Baseline	(C2)	9	25.4
@TICTOC1				

SOLID

96010381

0

N/A

S96T005135

CARE

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

RESULTS

DOI: 10.1002/for

04/04/87

01/04/07

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

1997

$\mu\text{g of Carbon/g} = (\text{C1}-\text{C2}) * \text{DF} / \text{SS}$
 $\mu\text{g of Carbon/g for TIC} = 5 \text{ if } \text{C1} < \text{C2}$
 $\mu\text{g of Carbon/g for TOC} = 40 \text{ if } \text{C1} < \text{C2}$

	TIC	TOC
Method Detection Limit in ug/g	5	40
ug of Carbon/g	3.37E+02	1.77E+02

Data Entered By:	LCM	Date:	01/04/97
Signature of Chemist:		Date:	01/06/97

SAMPLE.WB1 REV 1.0

342100ML

01/04/97

21:55:15

WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
DUP	Sample Size in g (SS)	0.1581	0.1581
	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	65.7	56.2
13863	µg of Carbon from Baseline (C2)	8	25.4
	Known µg of C from Original Sample	3.37E+2	1.77E+2
@TICTOC1			

SOLID

96010381

0

N/A

S96T005135

CARB2

ECM

RWS

DBB

QMG/97

QMG/97

QMG/97

B-109

µg of Carbon/g = (C1-C2) * DF / SS
µg of Carbon/g for TIC = 5 if C1 < C2
µg of Carbon/g for TOC = 40 if C1 < C2

Method Detection Limit in ug/g

µg of Carbon/g

TIC	TOC
5	40
3.59E+02	1.95E+02

Data Entered By:

LCM

Date: 01/04/97

Signature of Chemist:

John McChesney

Date: 01/06/97

SAMPLE.WB1 REV 1.0

342100ML

302

01/04/97

21:55:44

I:\342100\OUT\TT13863.WB1

WORKBOOK PAGE: SPIKE5

TIC/TOC : LA-342-100 (E-0)

SOLIDS

	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.1572	0.1572
13863	Final Coulometer Reading in µg (C1)	374.2	335.3
	Spiked Vial Data		
	Sample Size in g (SPK SS)	0.1572	0.1572
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
	Final Coulometer Reading in µg (C2)	374.2	335.3
SOLID	Spike Book Number	22N12F	24N12F
	Spike Standard Value in µg/mL (SPK CONC)	602	3000

96010381

0

N/A

S96T005135

Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100$

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100

9/1/97

CARB2

LCM

RWS

DPB

01/04/97

01/04/97

04:45 AM

B-103

QC Actual in µg/mL

QC Found in µg/mL

Percent Spike Recovery

TIC

TOC

6.02E+02

3.00E+03

6.26E+02

2.84E+03

104.0

94.7

Data Entered By:

LCM

Date: 01/04/97

Signature of Chemist:

Date: 01/04/97

SPIKE WB1 REV 1.1

342100ML

303

WORKBOOK PAGE: SAM6

TIC/TOC : LA-342-100 (E-0)

SOLIDS

TIC/TOC : LA-342-100 (E-0)		SOLIDS	TIC	TOC
	Sample Size in g	(SS)	0.1251	0.1251
SAMPLE	Dilution Factor	(DF)	1	1
	µg of Carbon in Sample	(C1)	39	44.2
13863	µg of Carbon from Baseline	(C2)	9	25.4
@TICTOC1				

SOLID			
96010381			
0			
N/A			
S96T005136			
TC/ERR2			
LOM			
RHS			
DEB			
01/04/97			
01/04/97			
01/04/97			
B-105			

$\mu\text{g of Carbon/g} = (C1-C2) * DF / SS$
 $\mu\text{g of Carbon/g for TIC} = 5 \text{ if } C1 < C2$
 $\mu\text{g of Carbon/g for TOC} = 40 \text{ if } C1 < C2$

	TIC	TOC
Method Detection Limit in ug/g	5	40
$\mu\text{g of Carbon/g}$	2.40E+02	1.50E+02

Data Entered By:	LCM	Date:	01/04/97
Signature of Chemist:		Date:	9/06/97

SAMPLE.WB1 REV 1.0

342100ML

01/04/97

21:57:21

WORKBOOK PAGE: DUP7

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
DUP	Sample Size in g (SS)	0.2020	0.2020
	Dilution Factor (DF)		1
13863	µg of Carbon in Sample (C1)	62.3	67.7
	µg of Carbon from Baseline (C2)	9	25.4
@TIC/TOC1	Known µg of C from Original Sample	2.64E+02	2.09E+02

SOLID
96010381
0
N/A
S96T005136
CARB2
LCM
RWS
DBB
01/04/97
01/04/97
01/04/97
B-108

µg of Carbon/g = (C1-C2) * DF / SS
 µg of Carbon/g for TIC = 5 if C1 < C2
 µg of Carbon/g for TOC = 40 if C1 < C2

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon/g	2.64E+02	2.09E+02

Data Entered By:	LCM	Date:	01/04/97
Signature of Chemist:		Date:	01/04/97

SAMPLE.WB1 REV 1.0

342100ML

WORKBOOK PAGE: SPIKE8

TIC/TOC : LA-342-100 (E-0)

SOLIDS

	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.1251	0.1251
	Final Coulometer Reading in µg (C1)	39	44.2
13863	Spiked Vial Data		
	Sample Size in g (SPK SS)	0.2002	0.2002
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
	Final Coulometer Reading in µg (C2)	407.2	393.8
SOLID	Spike Book Number	22N12F	24N12F
	Spike Standard Value in µg/mL (SPK CONC)	602	3000
96010381			
0			
N/A			

$$\text{Percent Spike Recovery} = (C2 - C1 * (\text{SPK SS}) / \text{SS}) / ((\text{SPK CONC}) * (\text{SPK VOL})) * 100$$

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100

gn
1/5/97

CARB2			
LCM			
RWS			
DRB			
01/04/97			
01/04/97			
04:10 AM	QC Actual in µg/mL	6.02E+02	3.00E+03
	QC Found in µg/mL	6.90E+02	3.23E+03
B-109	Percent Spike Recovery	114.5	107.7

Data Entered By:	LCM	Date:	01/04/97
Signature of Chemist:		Date:	01/06/97

SPIKE.WB1 REV 1.1

342100ML

306

I:\342100\OUT\TTT13863.WB1

01/04/97

21:58:21

LABCORE Completed Worklist Report for Worklist# 15715

Analyst: smf Instrument: CARB2 Book# _____

Method: LA-3A2-100 Rev/Mod E-C

Worklist Comment: @TICTOC1 FOR B-109 RTS!

Seq	Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK	0		@TICTOC1 TIC-02	SOLID	1	4.00E+0	4.000	ug/g
1	BLNK	0		@TICTOC1 TOC-02	SOLID	1	5.30E+0	5.300	ug/g
2	STD	0		@TICTOC1 TIC-02	SOLID	6.02E+02	6.10E+2	101.329	% Recovery
2	STD	0		@TICTOC1 TOC-02	SOLID	3.00E+03	2.88E+3	96.000	% Recovery
3	SAMPLE	S96T005124	0	@TICTOC1 TIC-02	SOLID	N/A	4.07E+02	5.000	ug/g
3	SAMPLE	S96T005124	0	@TICTOC1 TOC-02	SOLID	N/A	2.53E+02	40.000	ug/g
4	DUP	S96T005124	0	@TICTOC1 TIC-02	SOLID	4.07E+2	3.78E+2	7.389	RPD
4	DUP	S96T005124	0	@TICTOC1 TOC-02	SOLID	2.53E+2	2.63E+2	3.876	RPD

Final page for worklist# 15715

Analyst Signature _____ Date _____

[Signature] 12/18/96
Analyst Signature _____ Date _____

[Signature] 12/19/96
Reviewer Signature _____ Date _____

LABCORE Data Entry Template for Worklist# 15715

Analyst: _____ Instrument: CARB2 _____ Book# _____

Method: LA-342-100 Rev/Mod _____

Worklist Comment: @TICTOC1 FOR B-109 RTS!

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				@TICTOC1	SOLID		
2	STD				@TICTOC1	SOLID		
3	SAMPLE	S96T005124	0		@TICTOC1	SOLID	96001238	B-109
		Analytes Requested: TIC-02 , TOC-02						
4	DUP	S96T005124	0		@TICTOC1	SOLID		

Final page for worklist # 15715

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Data Entry Comments:

TIC/TOC: LA-342-100 (E-0)

WORKLIST

ANALYST

ANALYSIS

ANALYSIS

INSTRUMENT

INITIALS

DATE

TIME

CODE

12/3/96 15715
13494 CMM SMF

12-15-96

1800

☒ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # = Bare 2

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

4150

TOC:

200

23.50

SMF 12-14-96

☐ BASELINE
BLANK☒ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # = 916005124 Dup STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

179.90

TOC:

145.50

☐ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # = STD 2

STD # =

TIC - 22N12-F
TOC - 24N12-P

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

614.1

TOC:

400.20

☐ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

TOC:

☒ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # = BIK 2

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

8.50

TOC:

28.80

☐ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

TOC:

☐ BASELINE
BLANK☒ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # = 916005124

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

43.3

TOC:

47.60

☐ BASELINE
BLANK☐ SAMPLE
DUPLICATE☐ SPIKE
TRIPLICATE

SAMPLE # =

STD # =

SAMPLE WEIGHT (g)

SPIKE/STANDARD VOLUME (mL)

TIC:

TOC:

FINAL COULOMETER READING (u TIC:

TOC:

WHC-SD-WM-DP-201, REV. 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE2

Date: 12/14/96

Time: 09:34:57

Sample Size = 1 uL

Analyst : SM FULTON

Dil Factor = 1

Min Readings = 22

Blank ID # = BASELINE2

Max Readings = 22

Blank Value = N/A

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.70	42.86
4	2.01	0.90	22.22
5	2.51	1.10	18.18
6	3.01	1.30	15.38
7	3.50	1.40	7.14
8	4.00	1.70	17.65
9	4.50	1.90	10.53
10	5.00	2.20	13.64
11	5.50	2.40	8.33
12	6.00	2.60	7.69
13	6.50	2.80	7.14
14	7.00	3.00	6.67
15	7.50	3.20	6.25
16	8.00	3.40	5.88
17	8.50	3.60	5.56
18	9.00	3.80	5.26
19	9.50	3.90	2.56
20	10.00	4.10	4.88
21	10.50	4.30	4.65
22	11.00	4.50	4.44

BLANK VALUE = 4.5 micrograms carbon

BLANK FACTOR = 4.5 / 10.99799 =

+4.1E-01 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION ANALYSIS ON PAGES 310 TO 323

Sample Run By:

SM FULTON

Robert W. Schroeder For SM Fulton
XOXOX

~~HNF~~ WHC-SD-WM-DP-201, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASE2

Date: 12/14/96

Time: 09:49:35

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASE2
Blank Value = N/A

Analyst : SM FULTON
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.50	0.00
2	1.01	8.70	94.25
3	1.50	13.90	37.41
4	2.00	16.00	13.13
5	2.50	17.00	5.88
6	3.00	17.70	3.95
7	3.50	18.50	4.32
8	4.00	19.10	3.14
9	4.50	19.60	2.55
10	5.00	20.00	2.00
11	5.50	20.40	1.96
12	6.00	20.80	1.92
13	6.50	21.10	1.42
14	7.00	21.40	1.40
15	7.50	21.60	0.93
16	8.00	22.00	1.82
17	8.50	22.30	1.35
18	9.00	22.50	0.89
19	9.50	22.70	0.88
20	10.00	23.00	1.30
21	10.50	23.30	1.29
22	11.00	23.50	0.85

BLANK VALUE = 23.5 micrograms carbon

BLANK FACTOR = 23.5 / 10.99969 = +2.14E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SM FULTON

XOXOX

WHC-SD-WM-DP-201, REV. 1

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD2

Date: 12/14/96

Time: 10:41:41

Sample Size = 1000 uL

Dil Factor = 1

Blank ID # =

Blank Value = .41 ug/minute C

Analyst : SM FULTON

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.80	0.00
2	1.01	107.90	96.48
3	1.51	295.20	63.45
4	2.01	447.10	33.97
5	2.51	536.40	16.65
6	3.01	581.00	7.68
7	3.50	599.60	3.10
8	4.00	606.80	1.19
9	4.50	609.30	0.41
10	5.00	610.30	0.16
11	5.50	610.70	0.07
12	6.00	611.20	0.08
13	6.50	611.50	0.05
14	7.00	611.90	0.07
15	7.50	612.20	0.05
16	8.00	612.40	0.03
17	8.50	612.80	0.07
18	9.00	613.00	0.03
19	9.50	613.30	0.05
20	10.00	613.60	0.05
21	10.50	613.80	0.03
22	11.00	614.10	0.05

USER INPUT BLANK VALUE

BLANK VALUE = 4.509875 micrograms carbon

BLANK FACTOR = 4.509875 / 10.99969 = +4.1E-01 ug/min Carbon

SAMPLE RESULTS:

(614.1 - 4.509124) (1)/(1000) = +6.096E-01 g/L Carbon
 (614.1 - 4.509124) (1)/(1000) (12) = +5.080E-02 Molar Carbon

Sample Run By:

SM FULTON

12-14-96
XOXOX

HWF WHC-SD-WM-DP-201, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD2

Date: 12/14/96

Time: 10:59:46

Sample Size = 200 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.14 ug/minute C

Analyst : SM FULTON

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	162.40	0.00
2	1.00	373.30	56.50
3	1.50	512.30	27.13
4	2.00	562.20	8.88
5	2.50	579.10	2.92
6	3.00	585.20	1.04
7	3.50	588.10	0.49
8	4.00	590.20	0.36
9	4.50	591.90	0.29
10	5.00	593.10	0.20
11	5.50	594.00	0.15
12	6.00	594.90	0.15
13	6.50	595.50	0.10
14	7.00	596.10	0.10
15	7.50	596.70	0.10
16	8.00	597.20	0.08
17	8.50	597.70	0.08
18	9.00	598.30	0.10
19	9.50	598.90	0.10
20	10.00	599.40	0.08
21	10.50	599.80	0.07
22	11.00	600.20	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 23.53935 micrograms carbon

BLANK FACTOR = 23.53935 / 10.99969 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(600.2 - 23.5336) (1)/(200) = +2.883E+00 g/L Carbon
 (600.2 - 23.5336) (1)/(200) (12) = +2.403E-01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SM FULTON

XOXOX

HVF
WHC-SD-WM-DP-201, REV. 1
TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK2

Date: 12/14/96

Time: 11:14:40

Sample Size = 1 uL

Analyst : SM FULTON

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = .41 ug/minute C

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	2.40	70.83
3	1.50	3.20	25.00
4	2.00	3.80	15.79
5	2.50	4.10	7.32
6	3.00	4.40	6.82
7	3.50	4.70	6.38
8	4.00	5.00	6.00
9	4.50	5.30	5.66
10	5.00	5.50	3.64
11	5.50	5.70	3.51
12	6.00	6.00	5.00
13	6.50	6.20	3.23
14	7.00	6.50	4.62
15	7.50	6.70	2.99
16	8.00	7.00	4.29
17	8.50	7.20	2.78
18	9.00	7.50	4.00
19	9.50	7.80	3.85
20	10.00	8.00	2.50
21	10.50	8.20	2.44
22	11.00	8.50	3.53

USER INPUT BLANK VALUE

BLANK VALUE = 4.509875 micrograms carbon

BLANK FACTOR = 4.509875 / 10.99969 = +4.1E-01 ug/min Carbon

SAMPLE RESULTS:

(8.5 - 4.509925) (1)/(1)	=	+4.0E+00	g/L Carbon
(8.5 - 4.509925) (1)/(1) (12)	=	+3.3E-01	Molar Carbon

Sample Run By:

SM FULTON

XOXOX

WHC-SD-WM-DP-201, REV. 1

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK2

Date: 12/14/96

Time: 11:26:58

Sample Size = 1 uL

Analyst : SM FULTON

Dil Factor = 1

Min Readings = 22

Blank ID # =

Max Readings = 22

Blank Value = 2.14 ug/minute C

% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.00	9.10	98.90
3	1.50	15.60	41.67
4	2.00	19.30	19.17
5	2.50	21.00	8.10
6	3.00	22.20	5.41
7	3.50	23.00	3.48
8	4.00	23.90	3.77
9	4.50	24.50	2.45
10	5.00	25.00	2.00
11	5.50	25.50	1.96
12	6.00	25.90	1.54
13	6.50	26.20	1.15
14	7.00	26.50	1.13
15	7.50	26.90	1.49
16	8.00	27.20	1.10
17	8.50	27.40	0.73
18	9.00	27.80	1.44
19	9.50	28.00	0.71
20	10.00	28.30	1.06
21	10.50	28.60	1.05
22	11.00	28.80	0.69

USER INPUT BLANK VALUE

BLANK VALUE = 23.53935 micrograms carbon

BLANK FACTOR = 23.53935 / 10.99969 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(28.8 - 23.5353) (1)/(1) = +5.26E+00 g/L Carbon
 (28.8 - 23.5353) (1)/(1) (12) = +4.39E-01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SM FULTON

XOXOX

WHC-SD-WM-DF-201, REV. 1
 TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
 TICTOC REV 2.0

Sample: S96T005124

Date: 12/14/96

Time: 11:47:34

Sample Size = 1 uL .0954
 Dil Factor = 1
 Blank ID # =
 Blank Value = .41 ug/minute C

Analyst : SM FULTON
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference ==
1	0.51	0.10	0.00
2	1.01	3.50	97.14
3	1.50	8.80	60.23
4	2.00	14.10	37.59
5	2.50	19.20	26.56
6	3.00	22.90	16.16
7	3.50	25.60	10.55
8	4.00	27.90	8.24
9	4.50	29.70	6.06
10	5.00	31.20	4.81
11	5.50	32.90	5.17
12	6.00	34.20	3.80
13	6.50	35.30	3.12
14	7.00	36.40	3.02
15	7.50	37.40	2.67
16	8.00	38.40	2.60
17	8.50	39.20	2.04
18	9.00	40.30	2.73
19	9.50	41.00	1.71
20	10.00	41.80	1.91
21	10.50	42.50	1.65
22	11.00	43.30	1.85

USER INPUT BLANK VALUE

BLANK VALUE = 4.509875 micrograms carbon

BLANK FACTOR = 4.509875 / 10.99969 = +4.1E-01 ug/min Carbon

SAMPLE RESULTS:

(43.3 - 4.509524) (1)/(1) = +3.88E+01 g/L Carbon
 (43.3 - 4.509524) (1)/(1) (12) = +3.23E+00 Molar Carbon

Sample Run By:

SM FULTON

XOXOX

HVF
WHC-SD-WM-DP-201, REV. 1TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005124

Date: 12/14/96

Time: 13:28:13

Sample Size = 1 uL .0954
 Dil Factor = 1
 Blank ID # =
 Blank Value = 2.14 ug/minute C

Analyst : SM FULTON
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==

1	0.51	0.90	0.00
2	1.01	9.30	90.32
3	1.50	23.30	60.09
4	2.00	31.50	26.03
5	2.50	35.40	11.02
6	3.00	37.40	5.35
7	3.50	38.90	3.86
8	4.00	39.90	2.51
9	4.50	40.80	2.21
10	5.00	41.50	1.69
11	5.50	42.20	1.66
12	6.00	42.80	1.40
13	6.50	43.30	1.15
14	7.00	43.80	1.14
15	7.50	44.40	1.35
16	8.00	44.90	1.11
17	8.50	45.40	1.10
18	9.00	45.80	0.87
19	9.50	46.30	1.08
20	10.00	46.80	1.07
21	10.50	47.10	0.64
22	11.00	47.60	1.05

USER INPUT BLANK VALUE

BLANK VALUE = 23.53935 micrograms carbon

BLANK FACTOR = 23.53935 / 10.99969 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(47.6 - 23.53177) (1)/(1) = +2.41E+01 g/L Carbon
 (47.6 - 23.53177) (1)/(1) (12) = +2.01E+00 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SM FULTON

XOXOX

HVF
WHC-SD-WM-DP-201, REV. 1
TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005124 ^{Dup} Date: 12/14/96 Time: 13:49:13

Sample Size = 1 uL ^{SMF 12-14-96}
Dil Factor = 1 ^{.444}
Blank ID # =
Blank Value = .41 ug/minute C

Analyst : SM FULTON
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	4.70	93.62
3	1.50	16.30	71.17
4	2.00	34.40	52.62
5	2.50	52.90	34.97
6	3.00	71.20	25.70
7	3.50	88.00	19.09
8	4.00	102.10	13.81
9	4.50	113.50	10.04
10	5.00	123.00	7.72
11	5.50	131.50	6.46
12	6.00	139.00	5.40
13	6.50	145.30	4.34
14	7.00	150.40	3.39
15	7.50	155.30	3.16
16	8.00	159.80	2.82
17	8.50	164.10	2.62
18	9.00	168.10	2.38
19	9.50	171.40	1.93
20	10.00	173.90	1.44
21	10.50	176.70	1.58
22	11.00	179.90	1.78

USER INPUT BLANK VALUE

BLANK VALUE = 4.509875 micrograms carbon

BLANK FACTOR = 4.509875 / 10.99969 = +4.1E-01 ug/min Carbon

SAMPLE RESULTS:

(179.9 - 4.508774) (1)/(1) = +1.754E+02 g/L Carbon
(179.9 - 4.508774) (1)/(1) (12) = +1.462E+01 Molar Carbon

Sample Run By:

SM FULTON

XOXOX

WHC-SD-WM-DP-201, REV. 1
 TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
 TIC/TOC REV 2.0

Sample: S96T005124DUP

Date: 12/14/96

Time: 14:01:53

Sample Size = 1 uL *4641*
 Dil Factor = 1
 Blank ID # =
 Blank Value = 2.14 ug/minute C

Analyst : SM FULTON
 Min Readings = 22
 Max Readings = 22
 % Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.20	0.00
2	1.01	27.90	92.11
3	1.51	68.60	59.33
4	2.00	98.20	30.14
5	2.50	110.70	11.29
6	3.00	116.00	4.57
7	3.50	119.30	2.77
8	4.00	122.20	2.37
9	4.50	124.40	1.77
10	5.00	126.20	1.43
11	5.50	128.70	1.94
12	6.00	130.10	1.08
13	6.50	131.80	1.29
14	7.00	133.70	1.42
15	7.50	135.20	1.11
16	8.00	136.70	1.10
17	8.50	138.20	1.09
18	9.00	139.80	1.14
19	9.50	141.30	1.06
20	10.00	142.50	0.84
21	10.50	143.90	0.97
22	11.00	145.50	1.10

USER INPUT BLANK VALUE

BLANK VALUE = 23.53935 micrograms carbon

BLANK FACTOR = 23.53935 / 10.99969 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(145.5 - 23.53543) (1)/(1) = +1.220E+02 g/L Carbon
 (145.5 - 23.53543) (1)/(1) (12) = +1.016E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

SM FULTON

XOXOX

WORKBOOK PAGE: BLANK1

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0000	0.0000
BLNK	Dilution Factor (DF)	1	1
Work Book	µg of Carbon in Sample (C1)	8.5	28.8
15715	µg of Carbon from Baseline (C2)	4.5	23.5
Test Code			
@TICTOC1			
Matrix			
SOLID			
Batch Number			
96012330			
Rerun	µg of Carbon = C1-C2		
0			
Sample Prep			
N/A			
Sample ID			
BLNK			
Instrument Code			
CARB2			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SMF			
Date Collected			
12/18/96			
Analysis Date			
12/14/96			
Analysis Time	Method Detection Limit in ug/g	5	40
Sample Point	µg of Carbon	4.00E+00	5.30E+00
B-109			

Data Entered By:	RTS	Date:	12/18/96
Signature of Chemist:	<i>RWS</i>	Date:	12/19/96

BLANK WB1 REV 1.0

342100ML

WORKBOOK PAGE: STD2

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
Type	Sample Size in mL (SS)	1.0000	0.2000
STD	Dilution Factor (DF)	1	1
Work List	Final Coulometer Reading in µg (C1)	614.1	600.2
15715	µg of Carbon from Baseline (C2)	4.5	23.5
Test Code	Standard Book Number	22N12F	24N12F
@TICTOC1	Standard Value (µg/ml)	602	3000
Matrix			
LIQUID			
Batch Number			
96012330			
Rerun			
0	QC Actual in µg/mL = Standard Value (µg/mL)		
Sample Prep	QC Found in µg/mL = (C1 - C2) * DF / SS		
N/A	QC Found in µg/mL for TIC = 5 if C1 < C2		
Sample #	QC Found in µg/mL for TOC = 40 if C1 < C2		
STD			
Instrument Code	% Recovery = QC Found / QC Actual * 100		
CARB2			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SMF			
Date Complete			
12/18/96			
Analysis Date			
12/14/96			
Analysis Date	Method Detection Limit in µg/mL	5	40
	QC Actual in µg/mL	6.02E+02	3.00E+03
Sample Point	QC Found in µg/mL	6.10E+02	2.88E+03
B-109	Percent Standard Recovery	101.3	96.1

Data Entered By:	RTS	Date:	12/18/96
Signature of Chemist:	<i>[Signature]</i>	Date:	12/19/96

STANDARD WB1 REV 1.0 342100ML

WORKBOOK PAGE: SAM3

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.0954	0.0954
SAMPLE	Dilution Factor (DF)	1	1
Work Unit	µg of Carbon in Sample (C1)	43.3	47.6
15715	µg of Carbon from Baseline (C2)	4.5	23.5
@TICTOC1			

Matrix
SOLID
Batch Number
96012330
Rerun
0
Sample Prep
N/A
Sample #
S96T005124
Instrument Code
CARB2
Prepared by
RTS
Chemist
RWS
Analyst
SMF
Date Collected
12/18/96
Analysis Date
12/14/96
Analysis Time
Method Detection Limit in ug/g
Sample Point
B-109

µg of Carbon/g = (C1-C2) * DF / SS
 µg of Carbon/g for TIC = 5 if C1 < C2
 µg of Carbon/g for TOC = 40 if C1 < C2

TIC	TOC
5	40
4.07E+02	2.53E+02

Data Entered By:	RTS	Date: 12/18/96
Signature of Chemist:	<i>R. Schwertler</i>	Date: 12/19/96

SAMPLE.WB1 REV 1.0

342100ML

322

WORKBOOK PAGE: DUP4

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Type	Sample Size in g (SS)	0.4641	0.4641
DUP	Dilution Factor (DF)	1	1
Work List	µg of Carbon in Sample (C1)	179.9	145.5
15715	µg of Carbon from Baseline (C2)	4.5	23.5
Test Code	Known µg of C from Original Sample	4.07E+2	2.53E+2
@TICTOC1			
Matrix			
SOLID			
Batch Number			
96012330			
Run	µg of Carbon/g = (C1-C2) * DF / SS		
0	µg of Carbon/g for TIC = 5 if C1 < C2		
Sample Prep	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
Sample #			
S96T005124			
Instrument Code			
CARB2			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
SMF			
Date Completed			
12/18/96			
Analysis Date			
12/14/96			
Analysis Time	Method Detection Limit in ug/g	5	40
Sample Point	µg of Carbon/g	3.78E+02	2.63E+02
B-109			

Data Entered By:	RTS	Date:	12/18/96
Signature of Chemist:	<i>RWS</i>	Date:	12/19/96

SAMPLE.WB1 REV 1.0

342100ML

323

LABCORE Completed Worklist Report for Worklist# 15851

Analyst: dgg

Instrument: CARB2

Book# _____

Method: LA-342-100 Rev/Mod E-O

Worklist Comment: B-109 @TICTOC1

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 BLNK	0		@TICTOC1 TIC-02	SOLID	1	1.10e0	1.100	ug/g
1 BLNK	0		@TICTOC1 TOC-02	SOLID	1	3.30e0	3.300	ug/g
2 STD	0		@TICTOC1 TIC-02	SOLID	6.02e2	6.01e2	99.834 % Recovery	
2 STD	0		@TICTOC1 TOC-02	SOLID	3.00e03	2.70e3	90.000 % Recovery	
3 SAMPLE	S96T005119	0	@TICTOC1 TIC-02	SOLID	N/A	6.02e2	5.000	ug/g
3 SAMPLE	S96T005119	0	@TICTOC1 TOC-02	SOLID	N/A	2.51e2	80.000	ug/g
4 DUP	S96T005119	0	@TICTOC1 TIC-02	SOLID	6.02e2	4.65e2	25.679	RPD
4 DUP	S96T005119	0	@TICTOC1 TOC-02	SOLID	2.51e2	2.71e2	7.663	RPD
5 SPK	S96T005119	0	@TICTOC1 TIC-02	SOLID	100	105.2	105.200 % Recovery	
5 SPK	S96T005119	0	@TICTOC1 TOC-02	SOLID	100	93.9	93.900 % Recovery	

Final page for worklist# 15851

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Rolando W. Shveden 1/3/97
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 15851

Analyst: dgg Instrument: CARB2 _____ Book# _____

Method: LA-342-100 Rev/Mod E-C

Worklist Comment: B-109 @TICTOC1

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 BLNK			@TICTOC1	SOLID		
2 STD			@TICTOC1	SOLID		
3 SAMPLE	S96T005119 0		@TICTOC1	SOLID	96001238	B-109
	Analytes Requested: TIC-02 , TOC-02					
4 DUP	S96T005119 0		@TICTOC1	SOLID		
5 SPK	S96T005119 0		@TICTOC1	SOLID		

Final page for worklist # 15851

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code
325

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT

TICTOC REV 2.0

<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 12/22/96

Time: 22:22:26

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASELINE
Blank Value = N/A

Analyst : DG GRIFFIN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	== Analysis Time ==	== Coulometer ==	== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.40	100.00
3	1.51	1.30	69.23
4	2.01	2.00	35.00
5	2.50	2.70	25.93
6	3.00	2.80	3.57
7	3.50	3.10	9.68
8	4.00	3.40	8.82
9	4.50	3.70	8.11
10	5.00	3.70	0.00
11	5.50	3.80	2.63
12	6.00	4.00	5.00
13	6.50	4.40	9.09
14	7.00	4.40	0.00
15	7.50	4.40	0.00
16	8.00	4.50	2.22
17	8.50	4.70	4.26
18	9.00	4.90	4.08
19	9.50	4.90	0.00
20	10.00	5.10	3.92
21	10.50	5.20	1.92
22	11.00	5.20	0.00

BLANK VALUE = 5.2 micrograms carbon

BLANK FACTOR = 5.2 / 10.99792 =

+4.7E-01

ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 327 TO 342.

Sample Run By:

RW Schmedt
DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BASELINE

Date: 12/22/96

Time: 22:35:29

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASELINE
Blank Value = N/A

Analyst : DG GRIFFIN
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	0.60	100.00
3	1.50	5.20	88.46
4	2.00	10.50	50.48
5	2.50	13.90	24.46
6	3.00	15.90	12.58
7	3.50	17.50	9.14
8	4.00	18.30	4.37
9	4.50	18.80	2.66
10	5.00	19.20	2.08
11	5.50	20.00	4.00
12	6.00	20.00	0.00
13	6.50	20.30	1.48
14	7.00	20.60	1.46
15	7.50	20.90	1.44
16	8.00	21.10	0.95
17	8.50	21.30	0.94
18	9.00	21.70	1.84
19	9.50	21.90	0.91
20	10.00	22.30	1.79
21	10.50	22.40	0.45
22	11.00	22.80	1.75

BLANK VALUE = 22.8 micrograms carbon

BLANK FACTOR = 22.8 / 10.9978 = +2.07E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DG GRIFFIN

00000

HMF
TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD. 22N12-F Date: 12/22/96 Time: 22:50:31

Sample Size = 1000 uL Analyst : DG GRIFFIN
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .47 ug/minute C % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	0.80	100.00
3	1.51	37.00	97.84
4	2.00	179.60	79.40
5	2.50	357.50	49.76
6	3.00	480.70	25.63
7	3.50	547.80	12.25
8	4.00	581.70	5.83
9	4.50	596.30	2.45
10	5.00	601.60	0.88
11	5.50	603.40	0.30
12	6.00	603.80	0.07
13	6.50	604.50	0.12
14	7.00	604.70	0.03
15	7.50	605.10	0.07
16	8.00	605.30	0.03
17	8.50	605.40	0.02
18	9.00	605.60	0.03
19	9.50	605.90	0.05
20	10.00	606.10	0.03
21	10.50	606.10	0.00
22	11.00	606.30	0.03

USER INPUT BLANK VALUE

BLANK VALUE = 5.168967 micrograms carbon

BLANK FACTOR = 5.168967 / 10.9978 = +4.7E-01 ug/min Carbon

SAMPLE RESULTS:

(606.3 - 5.169024) (1) / (1000) = +6.011E-01 g/L Carbon
 (606.3 - 5.169024) (1) / (1000) (12) = +5.009E-02 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD. 24N12-F Date: 12/22/96 Time: 23:06:00

Sample Size = 200 uL Analyst : DG GRIFFIN
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = 2.07 ug/minute C % Difference = 10

== Reading ==	Analysis	Time	Coulometer	% Difference
1	0.51		0.10	0.00
2	1.01		1.00	90.00
3	1.50		15.10	93.38
4	2.00		118.50	87.26
5	2.50		338.10	64.95
6	3.00		479.10	29.43
7	3.50		529.90	9.59
8	4.00		548.50	3.39
9	4.50		554.10	1.01
10	5.00		556.60	0.45
11	5.50		557.70	0.20
12	6.00		558.30	0.11
13	6.50		558.90	0.11
14	7.00		559.60	0.13
15	7.50		560.00	0.07
16	8.00		560.30	0.05
17	8.50		560.60	0.05
18	9.00		561.20	0.11
19	9.50		561.50	0.05
20	10.00		561.70	0.04
21	10.50		562.10	0.07
22	11.00		562.50	0.07

USER INPUT BLANK VALUE

BLANK VALUE = 22.76545 micrograms carbon
BLANK FACTOR = 22.76545 / 10.9978 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(562.5 - 22.76596) (1) / (200) = +2.699E+00 g/L Carbon
(562.5 - 22.76596) (1) / (200) (12) = +2.249E-01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By: DG GRIFFIN 00000

HNF

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK

Date: 12/22/96

Time: 23:19:56

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .47 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time ==	Coulometer ==	% Difference ==
1	0.51	0.00	0.00
2	1.01	0.20	100.00
3	1.50	1.70	88.24
4	2.00	2.70	37.04
5	2.50	3.60	25.00
6	3.01	3.60	0.00
7	3.50	4.00	10.00
8	4.00	4.10	2.44
9	4.50	4.10	0.00
10	5.00	4.60	10.87
11	5.50	4.70	2.13
12	6.00	4.80	2.08
13	6.50	4.80	0.00
14	7.00	5.10	5.88
15	7.50	5.10	0.00
16	8.00	5.30	3.77
17	8.50	5.40	1.85
18	9.00	5.50	1.82
19	9.50	5.80	5.17
20	10.00	5.90	1.69
21	10.50	6.00	1.67
22	11.00	6.30	4.76

USER INPUT BLANK VALUE

BLANK VALUE = 5.168967 micrograms carbon

BLANK FACTOR = 5.168967 / 10.9978 = +4.7E-01 ug/min Carbon

SAMPLE RESULTS:

(6.3 - 5.170287) (1)/(1) = +1.1E+00 g/L Carbon
(6.3 - 5.170287) (1)/(1) (12) = +9.4E-02 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

Z

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLANK

Date: 12/22/96

Time: 23:36:31

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.07 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

```
== Reading ==== Analysis Time ==== Coulometer ==== % Difference ==
 1          0.51          0.00          0.00
 2          1.01          0.00          0.00
 3          1.51          2.00         100.00
 4          2.00          5.70         64.91
 5          2.50          9.70         41.24
 6          3.00         12.20         20.49
 7          3.50         13.60         10.29
 8          4.00         14.40          5.56
 9          4.50         15.20          5.26
10          5.00         15.80          3.80
11          5.50         15.90          0.63
12          6.00         16.20          1.85
13          6.50         16.70          2.99
14          7.00         17.50          4.57
15          7.50         17.50          0.00
16          8.00         17.50          0.00
17          8.50         17.70          1.13
18          9.00         17.90          1.12
19          9.50         18.40          2.72
20         10.00         18.40          0.00
21         10.50         18.70          1.60
22         11.00         19.10          2.09
```

USER INPUT BLANK VALUE

BLANK VALUE = 22.76545 micrograms carbon

BLANK FACTOR = 22.76545 / 10.9978 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

```
( 19.1 - 22.76772 ) (1) / (1) = < 5.00 E-3 g/L Carbon
( 19.1 - 22.76772 ) (1) / (1) (12) = < 4.17 E-4 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>
```

Sample Run By:

DG GRIFFIN

00000

HMF

TIC/TOC : LA-342-100 (E-0)

LIQUIDS

		TIC	TOC
Sample Size in mL	(SS)	1.0000	0.2000
STANDARD Dilution Factor	(DF)	1	1
Final Coulometer Reading in μg	(C1)	606.3	562.5
15851 μg of Carbon from Baseline	(C2)	5.2	22.8
Standard Book Number		22N12F	24N12F
@TIC/TOC1 Standard Value ($\mu\text{g}/\text{mL}$)		602	3000

LIQUID

0

QC Actual in $\mu\text{g}/\text{mL}$ = Standard Value ($\mu\text{g}/\text{mL}$)QC Found in $\mu\text{g}/\text{mL}$ = (C1 - C2) * DF / SS

N/A

QC Found in $\mu\text{g}/\text{mL}$ for TIC = 5 if C1 < C2QC Found in $\mu\text{g}/\text{mL}$ for TOC = 40 if C1 < C2

STANDARD

% Recovery = QC Found / QC Actual * 100

RWS

RWS

DGG

01/03/97

12/23/96

	TIC	TOC
Method Detection Limit in $\mu\text{g}/\text{mL}$	5	40
QC Actual in $\mu\text{g}/\text{mL}$	6.02E+02	3.00E+03
QC Found in $\mu\text{g}/\text{mL}$	6.01E+02	2.70E+03
B-109 Percent Standard Recovery	99.9	90.0

Data Entered By:

RWS

Date: 01/03/97

Signature of Chemist:

RWS

Date: 1/3/97

STANDARD.WB1 REV 1.0

342100ML

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
Sample Size in g	(SS)	0.0000	0.0000
BLANK	Dilution Factor	1	1
	µg of Carbon in Sample	6.3	19.1
15851	µg of Carbon from Baseline	5.2	22.8

@TICTOC1
Solid
µg of Carbon = C1-C2
0
N/A
Blank
RWS
RWS
DGG
01/03/97
12/23/96
B-109

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon	1.10E+00	3.70E+00

Data Entered By:	RWS	Date:	01/03/97
Signature of Chemist:	<i>RWS</i>	Date:	1/3/97

BLANK.WB1 REV 1.0

342100ML

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
	Sample Size in g (SS)	0.1300	0.1300
SAMPLE	Dilution Factor (DF)	1	1
	µg of Carbon in Sample (C1)	81.2	69
13861	µg of Carbon from Baseline (C2)	3	36.4
@TICTOC1			
SOLID			
96010378			
0	µg of Carbon/g = (C1-C2) * DF / SS		
	µg of Carbon/g for TIC = 5 if C1 < C2		
	µg of Carbon/g for TOC = 40 if C1 < C2		
N/A			
S96T005119			
Carb2			
Prepared By			
NEW			
Chemist			
RWS			
Anal			
DGG			
12/23/96			
12/23/96			
	Method Detection Limit in ug/g	5	40
09:16 PM			
	µg of Carbon/g	6.02E+02	2.51E+02
B-109			

Data Entered By: <i>Newlight</i>	NEW	Date: 12/23/96
Signature of Chemist: <i>RW Schmede</i>		Date: 12/23/96

SAMPLE WB1 REV 1.0

342100ML

335

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005119

Date: 12/23/96

Time: 01:32:36

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .47 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis	Time	Coulometer	% Difference
1	0.51		0.30	0.00
2	1.01		1.10	72.73
3	1.51		7.30	84.93
4	2.00		20.50	64.39
5	2.50		35.90	42.90
6	3.00		48.10	25.36
7	3.50		55.10	12.70
8	4.00		60.50	8.93
9	4.50		63.00	3.97
10	5.00		65.20	3.37
11	5.50		67.70	3.69
12	6.00		69.40	2.45
13	6.50		71.40	2.80
14	7.00		72.70	1.79
15	7.50		73.80	1.49
16	8.00		75.10	1.73
17	8.50		76.30	1.57
18	9.00		77.90	2.05
19	9.50		78.30	0.51
20	10.00		80.10	2.25
21	10.50		80.10	0.00
22	11.00		81.20	1.35

USER INPUT BLANK VALUE

BLANK VALUE = 5.168967 micrograms carbon

BLANK FACTOR = 5.168967 / 10.9978 = +4.7E-01 ug/min Carbon

SAMPLE RESULTS:

(81.2 - 5.169064) (1) / (1) = +7.60E+01 g/L Carbon
(81.2 - 5.169064) (1) / (1) (12) = +6.34E+00 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005119

Date: 12/23/96

Time: 01:46:32

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.07 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.70	0.00
2	1.01	1.40	50.00
3	1.51	7.50	81.33
4	2.01	22.60	66.81
5	2.51	38.40	41.15
6	3.01	46.60	17.60
7	3.50	51.10	8.81
8	4.00	53.60	4.66
9	4.50	55.80	3.94
10	5.00	57.70	3.29
11	5.50	59.20	2.53
12	6.00	60.60	2.31
13	6.50	62.30	2.73
14	7.00	63.10	1.27
15	7.50	63.90	1.25
16	8.00	65.70	2.74
17	8.50	65.80	0.15
18	9.00	66.60	1.20
19	9.50	68.20	2.35
20	10.00	68.20	0.00
21	10.50	68.80	0.87
22	11.00	69.00	0.29

USER INPUT BLANK VALUE

BLANK VALUE = 22.76545 micrograms carbon

BLANK FACTOR = 22.76545 / 10.9978 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(69 - 22.7676) (1)/(1) = +4.62E+01 g/L Carbon
 (69 - 22.7676) (1)/(1) (12) = +3.85E+00 Molar Carbon
 <<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: DUP10

TIC/TOC : LA-342-100 (E-0)

SOLIDS

		TIC	TOC
DUP	Sample Size in g (SS)	0.1704	0.1704
	Dilution Factor (DF)	1	1
13861	µg of Carbon in Sample (C1)	82.3	82.6
	µg of Carbon from Baseline (C2)	3	36.4
@TICTOC1	Known µg of C from Original Sample	6.02E+2	2.51E+2

SOLID
96010378
0
N/A
S96T005119
Carb2
NEW
RWS
DGG
12/23/96
12/23/96
09:16 PM
B-109

µg of Carbon/g = (C1-C2) * DF / SS
 µg of Carbon/g for TIC = 5 if C1 < C2
 µg of Carbon/g for TOC = 40 if C1 < C2

	TIC	TOC
Method Detection Limit in ug/g	5	40
µg of Carbon/g	4.65E+02	2.71E+02

Data Entered By: <i>NEW</i>	NEW	Date: 12/23/96
Signature of Chemist: <i>NEW</i>		Date: 1/3/96

SAMPLE.WB1 REV 1.0

342100ML

338

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005119DUP Date: 12/23/96 Time: 02:03:35

Sample Size = 1 uL Analyst : DG GRIFFIN
Dil Factor = 1 Min Readings = 22
Blank ID # = Max Readings = 22
Blank Value = .47 ug/minute C % Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	0.00	0.00
2	1.01	1.30	100.00
3	1.50	8.80	85.23
4	2.00	18.90	53.44
5	2.50	31.20	39.42
6	3.00	42.40	26.42
7	3.50	50.00	15.20
8	4.00	55.00	9.09
9	4.50	58.70	6.30
10	5.00	62.10	5.48
11	5.50	64.50	3.72
12	6.00	66.40	2.86
13	6.50	68.90	3.63
14	7.00	70.20	1.85
15	7.50	72.10	2.64
16	8.00	73.80	2.30
17	8.50	75.30	1.99
18	9.00	77.10	2.33
19	9.50	77.90	1.03
20	10.00	79.50	2.01
21	10.50	80.80	1.61
22	11.00	82.30	1.82

USER INPUT BLANK VALUE

BLANK VALUE = 5.168967 micrograms carbon

BLANK FACTOR = 5.168967 / 10.9978 = +4.7E-01 ug/min Carbon

SAMPLE RESULTS:

(82.3 - 5.168587) (1)/(1) = +7.71E+01 g/L Carbon
(82.3 - 5.168587) (1)/(1) (12) = +6.43E+00 Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005119DUP

Date: 12/23/96

Time: 02:16:40

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.07 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	1.00	0.00
2	1.01	2.60	61.54
3	1.50	12.70	79.53
4	2.00	27.00	52.96
5	2.50	41.40	34.78
6	3.00	51.50	19.61
7	3.50	56.50	8.85
8	4.00	60.70	6.92
9	4.50	63.90	5.01
10	5.00	66.20	3.47
11	5.50	68.50	3.36
12	6.00	70.20	2.42
13	6.50	71.70	2.09
14	7.00	73.10	1.92
15	7.50	74.50	1.88
16	8.00	76.30	2.36
17	8.50	77.20	1.17
18	9.00	78.10	1.15
19	9.50	79.30	1.51
20	10.00	80.30	1.25
21	10.50	81.30	1.23
22	11.00	82.60	1.57

USER INPUT BLANK VALUE

BLANK VALUE = 22.76545 micrograms carbon

BLANK FACTOR = 22.76545 / 10.9978 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(82.6 - 22.76553) (1)/(1) = +5.98E+01 g/L Carbon
 (82.6 - 22.76553) (1)/(1) (12) = +4.99E+00 Molar Carbon
 <<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>

Sample Run By:

DG GRIFFIN

00000

WORKBOOK PAGE: SPIKE11

TIC/TOC : LA-342-100 (E-0)

SOLIDS

	Sample Vial Data	TIC	TOC
SPK	Sample Size in g (SS)	0.1300	0.1300
	Final Coulometer Reading in µg (C1)	81.2	69
13861	Spiked Vial Data		
	Sample Size in g (SPK SS)	0.1368	0.1368
@TICTOC1	Amount of Spike Std. in mL (SPK VOL)	0.500	0.100
	Final Coulometer Reading in µg (C2)	402.2	354.4
SOLID	Spike Book Number	22N12F	24N12F
	Spike Standard Value in µg/mL (SPK CONC)	602	3000
96010378			

0
N/A
S96T005119
Carb2
NEW
RWS
DGG
12/23/96
12/23/96
09:16 PM
B-109

Percent Spike Recovery = $(C2 - C1 * (SPK SS) / SS) / ((SPK CONC) * (SPK VOL)) * 100$

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = (Percent Spike Recovery)*(QC Actual) / 100

341/5/97

	TIC	TOC
QC Actual in µg/mL	6.02E+02	3.00E+03
QC Found in µg/mL	6.34E+02	2.82E+03
Percent Spike Recovery	105.2	93.9

Data Entered By: <i>Newlight</i>	NEW	Date: 12/23/96
Signature of Chemist: <i>RW Schrock</i>		Date: 1/3/97

SPIKE.WB1 REV 1.1

342100ML

341

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005119SPK

Date: 12/23/96

Time: 02:40:10

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = .47 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	==== Analysis Time ==	==== Coulometer ==	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	2.10	90.48
3	1.50	38.00	94.47
4	2.00	127.00	70.08
5	2.50	224.60	43.46
6	3.00	293.60	23.50
7	3.50	336.10	12.65
8	4.00	359.00	6.38
9	4.50	369.70	2.89
10	5.00	375.40	1.52
11	5.50	379.50	1.08
12	6.00	383.10	0.94
13	6.50	385.60	0.65
14	7.00	388.00	0.62
15	7.50	390.00	0.51
16	8.00	392.30	0.59
17	8.50	394.10	0.46
18	9.00	396.30	0.56
19	9.50	398.10	0.45
20	10.00	399.50	0.35
21	10.50	401.00	0.37
22	11.00	402.20	0.30

USER INPUT BLANK VALUE

BLANK VALUE = 5.168967 micrograms carbon

BLANK FACTOR = 5.168967 / 10.9978 = +4.7E-01 ug/min Carbon

SAMPLE RESULTS:

(402.2 - 5.167727) (1)/(1)	=	+3.970E+02	g/L Carbon
(402.2 - 5.167727) (1)/(1) (12)	=	+3.309E+01	Molar Carbon

Sample Run By:

DG GRIFFIN

00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T005119SPK

Date: 12/23/96

Time: 02:53:13

Sample Size = 1 uL

Dil Factor = 1

Blank ID # =

Blank Value = 2.07 ug/minute C

Analyst : DG GRIFFIN

Min Readings = 22

Max Readings = 22

% Difference = 10

== Reading ==	Analysis Time	Coulometer	% Difference
1	0.51	1.00	0.00
2	1.01	3.20	68.75
3	1.50	20.10	84.08
4	2.00	105.20	80.89
5	2.50	224.90	53.22
6	3.00	289.00	22.18
7	3.50	315.00	8.25
8	4.00	325.00	3.08
9	4.50	329.60	1.40
10	5.00	333.50	1.17
11	5.50	335.70	0.66
12	6.00	338.40	0.80
13	6.50	339.70	0.38
14	7.00	341.90	0.64
15	7.50	343.90	0.58
16	8.00	345.20	0.38
17	8.50	347.20	0.58
18	9.00	349.00	0.52
19	9.50	349.90	0.26
20	10.00	351.10	0.34
21	10.50	352.40	0.37
22	11.00	354.40	0.56

USER INPUT BLANK VALUE

BLANK VALUE = 22.76545 micrograms carbon

BLANK FACTOR = 22.76545 / 10.9978 = +2.1E+00 ug/min Carbon

SAMPLE RESULTS:

(354.4 - 22.76586) (1)/(1) = +3.316E+02 g/L Carbon
 (354.4 - 22.76586) (1)/(1) (12) = +2.764E+01 Molar Carbon
 <<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!>>>>

Sample Run By:

DG GRIFFIN

00000

HMF
WHC-SD-WM-DP-201, REV. 1

RADIOCHEMICAL ANALYSIS

^{HMF}
~~WMC~~-SD-WM-DP-201, REV. 1

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LABCORE Data Entry Template for Worklist# 13792

Analyst: Rlu Instrument: AB00 14 Book# 66356

Method: LA-508-101 Rev/Mod E-1

Worklist Comment: Determine sample size using ludlum.Spike:0.1ml. new

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	LIQUID		
2 BLNK-PREP			@ALPHA01	LIQUID		
3 BLNK/BKG			@ALPHA01	LIQUID		
4 SAMPLE	S96T005116 0		@ALPHA01	LIQUID	96001238 B-109	
			Analytes Requested: ALPHA01 , ALPHA01E			
5 DUP	S96T005116 0		@ALPHA01	LIQUID		
6 SPK	S96T005116 0		@ALPHA01	LIQUID		

Final page for worklist # 13792

Rlu 10/10/96
Analyst Signature Date

M. E. ~ ~ ~ 10/10/96
Analyst Signature Date
C. J. Oprian 10/10/96

Data Entry Comments:

WORKBOOK PAGE: STD1

AT : LA-508-101 (E-1) LA-508-113 (A-2) STANDARD

	STANDARD	REPLICATE
Type	DETECTOR NUMBER	14 14
STD	DISH SIZE (1, 2, or 5) (MS)	2 2
Work List	GROSS COUNTS (GC)	3384 3173
13792	COUNT TIME IN MINUTES (CT)	30 30
AT or TB ?	BACKGROUND IN cpm (BKG)	0.4 0.4
AT	SAMPLE SIZE in mL (SS)	1.000 1.000
Test Code	DILUTION FACTOR (DF)	1 1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	66B56 66B56
Matrix	EFFICIENCY FACTOR (EFF)	0.2274 0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	112.400 105.367
Batch Number	Standard Value in $\mu\text{Ci/mL}$	2.31E-04
96010311	Concentration in $\mu\text{Ci/L}$ =	2.23E-01
ReRun	Replicate Concentration in $\mu\text{Ci/L}$ =	2.09E-01
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	2.1568E-01
Sample Prep		
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$	
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$	
WL13792	ALPHA TOTAL $\mu\text{Ci/mL}$ = $ALPHA\ TOTAL\ \mu\text{Ci/L} / 1000\text{mL/L}$	
Instrument Code	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$	
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.	
Prepared By		
MCB		
Chemist		
SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	2.18E-04
Analyst		
PJM		
Data Complete		
10/10/96	RELATIVE COUNTING ERROR =	3.5%
Analysis Date		
10/10/96		
Analysis Time		
12:30 AM		
Sample Point		
B-109		

Analyst:	MCB	Date: 10-Oct-96
Signature of Chemist:	SLF	Date: 10/14/96

STANDARD.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (E-1) LIQUIDS

Type	DETECTOR NUMBER	BLNK-PREP	REPLICATE
BLNK-PREP	DISH SIZE (1, 2, or 5)	14	14
Work List	GROSS COUNTS (MS)	2	2
13792	COUNT TIME IN MINUTES (GC)	5	9
AT or TB ?	COUNT TIME IN MINUTES (CT)	30	30
AT	BACKGROUND In cpm (BKG)	0.4	0.4
Test Code	SAMPLE SIZE In mL (SS)	1.000	1.000
@ALPHA01	DILUTION FACTOR (DF)	1	1
Matrix	DIGEST DILUTION FACTOR (DDF)	1	1
LIQUID	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
Batch Number	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.269	0.269
96010311	Blank Concentration In $\mu\text{Ci/L}$	< 5.34E-04	
Repn	Replicate Concentration In $\mu\text{Ci/L}$	< 5.34E-04	
0	Maximum Concentration In $\mu\text{Ci/L}$	< 5.3373E-04	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/L} = R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
WL13792-BLNK	$\text{ALPHA TOTAL } \mu\text{Ci/mL} = \text{ALPHA TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$		
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 5.34E-07	DETECTION LEVEL
Analyst	LESS Than Value was Determined from Lc.		
PJM			
Date Complete			1.25E-06 $\mu\text{Ci/mL}$
10/10/96	RELATIVE COUNTING ERROR	500.0%	
Analysis Date			
10/10/96			
Analysis Time			
12:30 AM			
Sample Point			
B-109			

Analyst:	PJM	Date: 10-Oct-96
Signature of Chemist:	SLF	Date: 10/14/96
BLANK.VB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM4

AT : LA-508-101 (E-1) LIQUIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	14	14
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	16	18
13792	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.4	0.4
AT	SAMPLE SIZE in mL (SS)	1.000	1.000
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	EFFICIENCY FACTOR (EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.424	0.501
Batch Number			
96010311	Blank Concentration in $\mu\text{Ci/L}$	< 8.41E-04	
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	< 9.93E-04	
0	Maximum Concentration in $\mu\text{Ci/L}$	< 9.9291E-04	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/L}$ = $R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
S96T005116	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L		
Instrument Code	Relative Counting Error = $[(The\ Square\ Root\ of\ TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 9.93E-07	DETECTION LEVEL
Analyst			
PJM	LESS THAN Value was Determined from Rmax.		
Date Complete			1.25E-06 $\mu\text{Ci/mL}$
10/10/96	RELATIVE COUNTING ERROR	500.0%	
Analysis Date			
10/10/96			
Analysis Time			
12:30 AM			
Sample Point			
B-109			

Analyst:	PJM	Date: 10-Oct-96
Signature of Chemist:	SLF	Date: 10/14/96
SAMPLE WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP5

AT : LA-508-101 (E-1) LIQUIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	14	14
DUP	DISH SIZE (1, 2, or 5)	2	2
Work List	GROSS COUNTS	13	22
13792	COUNT TIME In MINUTES	30	30
AT or TB ?	BACKGROUND In cpm	0.4	0.4
AT	SAMPLE SIZE In mL	1.000	1.000
Test Code	DILUTION FACTOR	1	1
@ALPHA01	DIGEST DILUTION FACTOR	1	1
Matrix	EFFICIENCY FACTOR	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.308	0.333

Batch Number	
96010311	Blank Concentration In $\mu\text{Ci/L}$
Repn	Replicate Concentration In $\mu\text{Ci/L}$
0	Maximum Concentration In $\mu\text{Ci/L}$

Sample Prep	
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/L} = R_s * 1000\text{mL/L} * DF * DDF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
S96T005116	$\text{ALPHA TOTAL } \mu\text{Ci/mL} = \text{ALPHA TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB27807	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By		
MCB		
Chemist		
SLF	ALPHA TOTAL in $\mu\text{Ci/mL}$ (Maximum) =	< 6.60E-07
Analyst		DETECTION LEVEL
PJM	LESS THAN Value was Determined from Rmax.	
Date Complete		1.25E-06
10/10/96	RELATIVE COUNTING ERROR	500.0%
Analysis Date		$\mu\text{Ci/mL}$
10/10/96		
Analysis Time		
12:30 AM		
Sample Point		
B-109		

Analyst:	PJM	Date: 10-Oct-96
Signature of Chemist:	SLF	Date: 10/14/96

SAMPLE.WB1 Rev. 1.0

508101ML

AT : LA-508-101 (E-1) LA-508-113 (A-2) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	14	14
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	55413	53525
13792	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.4	0.4
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	1.000	1.000
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR (DDF)	1	1
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	123B43	123B43
96010311	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVAl)	3.5868E-02	3.5868E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2274	0.2274
0	SAMPLE + SPIKE $\mu\text{Ci/mL}$ (S+S)	3.66E-03	3.53E-03
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/mL}$ in SAMPLE	<	9.9291E-07
N/A			
Sample #	Rs (Sample Count Rate) = (TC / CT) - BKG		
S96T005116	SAMPLE + SPIKE $\mu\text{Ci/mL}$ = Rs * DF * DDF / (EFF * SS * 2220000dpm/ μCi)		
Instrument Code	QC ACTUAL = SVAl		
WB27807	QC FOUND = (((S+S $\mu\text{Ci/mL}$ - SAMPLE $\mu\text{Ci/mL}$) * ((SDF/SVol)/(DF*DDF/SS))))		
Prepared By	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) * 100		
MCB			
Chemist			
SLF			
Analyst			
PJM			
Date Complete	NOTE: Original Sample result was a LESS THAN value. Zero (0) was subtracted from the spiked value for QC found calculation.		
10/10/96			
Analysis Date			
10/10/96	QC ACTUAL =	3.59E-02	
Analysis Time	QC FOUND =	3.60E-02	
12:30 AM	AVG. PERCENT SPIKE RECOVERY =	100.3%	
Sample Point			
B-109			

Analyst:	MCB	Date: 10-Oct-96
Signature of Chemist:	SLF	Date: 10/14/96
SPIKE WB1 Rev. 1.0	508101ML	

LABCORE Completed RadChem Report for Worklist#: 14084

Analyst: slh

Instrument: AB16

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Use .100 mL sample size. Rerun #1. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@ALPHA01 ALPHA01	SOLID	2.31E-04	2.04E-4	88.312	% Recovery
1 STD	0		@ALPHA01 ALPHA01E	SOLID	1.00	3.68E+00	3.680	% Ct. Error
2 BLNK-PREP	0		@ALPHA01 ALPHA01	SOLID	1	<2.45E-3		uCi/g
2 BLNK-PREP	0		@ALPHA01 ALPHA01E	SOLID	1.00	5.00E+02	500.000	uCi/g
3 BLNK/BKG	0		@ALPHA01 ALPHA01	SOLID	1.00E+00	1.67E+00	1.670	BLNK/BKG
4 SAMPLE	S96T005103	0 F	@ALPHA01 ALPHA01	SOLID	N/A	6.47E-02	319.0E-005	uCi/g
4 SAMPLE	S96T005103	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	1.50E+01	0.0E+000	% Ct. Error
5 DUP	S96T005103	0 F	@ALPHA01 ALPHA01	SOLID	6.47E-2	7.95E-2	20.527	RPD
5 DUP	S96T005103	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	1.28E+01	12.800	% Ct. Error
6 SPK	S96T005103	0 F	@ALPHA01 ALPHA01	SOLID	3.59E-02	1.93E-02	53.760	% Recovery
7 SAMPLE	S96T005109	0 F	@ALPHA01 ALPHA01	SOLID	N/A	1.17E-01	352.0E-005	uCi/g
7 SAMPLE	S96T005109	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	1.17E+01	0.0E+000	% Ct. Error
8 DUP	S96T005109	0 F	@ALPHA01 ALPHA01	SOLID	1.17E-1	1.36E-1	15.020	RPD
8 DUP	S96T005109	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	1.03E+01	10.300	% Ct. Error
9 SPK	S96T005109	0 F	@ALPHA01 ALPHA01	SOLID	3.59E-02	2.27E-02	63.231	% Recovery

Final page for worklist# 14084

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Reviewer Signature

Date

low SLF how SPK recoveries are consistent with
1st run values. Indicates sample matrix effect. No rerun
requested.

10/22/96

10/13/96 16:45
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 14084

Analyst: JCH Instrument: AB00 16 Book# 66 B36

Method: LA-508-101 Rev/Mod E-1

Worklist Comment: Use .100 mL sample size. Rerun #1. SLF

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	SOLID		
2 BLNK-PREP			@ALPHA01	SOLID		
3 BLNK/BKG			@ALPHA01	SOLID		
4 SAMPLE	S96T005103	0 F	@ALPHA01	SOLID	96001237	B-109
Analytes Requested: ALPHA01 , ALPHA01E						
5 DUP	S96T005103	0 F	@ALPHA01	SOLID		
6 SPK	S96T005103	0 F	@ALPHA01	SOLID		
7 SAMPLE	S96T005109	0 F	@ALPHA01	SOLID	96001237	B-109
Analytes Requested: ALPHA01 , ALPHA01E						
8 DUP	S96T005109	0 F	@ALPHA01	SOLID		
9 SPK	S96T005109	0 F	@ALPHA01	SOLID		

Final page for worklist # 14084

Sandra Howard Boatright
Analyst Signature Date
10-18-96

Shirley Hogen 10/21/96
Analyst Signature Date
C.J. Opium 10/21/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

HNF

WORKBOOK PAGE: STD1

AT : LA-508-101 (E-1) LA-508-113 (A-2) STANDARD

AT : LA-508-101 (E-1)		LA-508-113 (A-2) STANDARD	STANDARD	REPLICATE
	STD	DETECTOR NUMBER	16	16
		DISH SIZE (1, 2, or 5) (MS)	2	2
		GROSS COUNTS (GC)	2838	2893
	14084	COUNT TIME in MINUTES (CT)	30	30
		BACKGROUND in cpm (BKG)	0.07	0.07
	AT	SAMPLE SIZE in mL (SS)	1.000	1.000
		DILUTION FACTOR (DF)	1	1
	@ALPHA01	STANDARD BOOK NUMBER (Std BN)	66B56	66B56
		EFFICIENCY FACTOR (EFF)	0.2104	0.2104
	LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	94.530	96.363
		Standard Value in $\mu\text{Ci/mL}$	2.31E-04	
	96010621	Concentration in $\mu\text{Ci/L}$ =	2.02E-01	
		Replicate Concentration in $\mu\text{Ci/L}$ =	2.06E-01	
	0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	2.0434E-01	
	N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
		$ALPHA \text{ TOTAL } \mu\text{Ci/L} = Rs * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$		
	WL14084	$ALPHA \text{ TOTAL } \mu\text{Ci/mL} = ALPHA \text{ TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$		
		Relative Counting Error = $[(The \text{ Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.9$		
	WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
	SEH			
	SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =		2.04E-04
	SLH			
	10/21/96	RELATIVE COUNTING ERROR =		3.7%
	10/19/96			
	03:00 AM			
	B-109			

Analyst:	SEH	Date: 21-Oct-96
Signature of Chemist:	SLF	Date: 10/22/96

STANDARD.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (E-1)

SOLIDS

BLNK-PREP	DETECTOR NUMBER	BLNK-PREP	REPLICATE
	DISH SIZE (1, 2, or 5) (MS)	16	16
	GROSS COUNTS (GC)	2	2
14084	COUNT TIME in MINUTES (CT)	2	5
	BACKGROUND in cpm (BKG)	30	30
AT	SAMPLE SIZE in mL (SS)	0.07	0.07
	DILUTION FACTOR (DF)	0.100	0.100
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1	1
	EFFICIENCY FACTOR (EFF)	2.1232	2.1232
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	0.2104	0.2104
		0.113	0.243
96010621	Blank Concentration in $\mu\text{Ci/g}$	< 1.14E-03	
	Replicate Concentration in $\mu\text{Ci/g}$	< 2.45E-03	
0	Maximum Concentration in $\mu\text{Ci/g}$	< 2.4525E-03	
N/A	$R_s \text{ (Sample Count Rate)} = (TC / CT) - BKG$ $ALPHA \text{ TOTAL } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
WL14084	Relative Counting Error = $[(The \text{ Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SEH			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 2.45E-03	DETECTION LEVEL
SLH	LESS Than Value was Determined from Lc.		3.19E-03
10/21/96	RELATIVE COUNTING ERROR	500.0%	$\mu\text{Ci/g}$
10/19/96			
03:00 AM			
B-109			

Analyst:	SLH	Date: 21-Oct-96
Signature of Chemist:	SLF	Date: 10/22/96

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

AT : LA-508-101 (E-1)

SOLIDS

		SAMPLE	REPLICATE
	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	213	176
14084	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1232	2.1232
	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	7.030	5.797
96010621	Blank Concentration in $\mu\text{Ci/g}$	7.09E-02	
	Replicate Concentration in $\mu\text{Ci/g}$	5.85E-02	
1	Average Concentration in $\mu\text{Ci/g}$	6.4669E-02	
FUSION01	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
	ALPHA TOTAL $\mu\text{Ci/g}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$		
S96T005103	Relative Counting Error = $[(\text{The Square Root of } \text{TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SEH			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	6.47E-02
SLH			
10/21/96	RELATIVE COUNTING ERROR	15.0%	DETECTION LEVEL
			3.19E-03
			$\mu\text{Ci/g}$
10/19/96			
03:00 AM			
B-109			

Analyst:	SLH	Date: 21-Oct-96
Signature of Chemist:	SLF	Date: 10/22/96
SAMPLE WB1 Rev. 1.0 508101ML		

WORKBOOK PAGE: DUP5

AT : LA-508-101 (E-1)

SOLIDS

		DUP	REPLICATE
DUP	DETECTOR NUMBER	16	16
	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	239	250
14084	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1768	2.1768
	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	7.897	8.263
96010821	Blank Concentration in $\mu\text{Ci/g}$	7.77E-02	
	Replicate Concentration in $\mu\text{Ci/g}$	8.13E-02	
1	Average Concentration in $\mu\text{Ci/g}$	7.9468E-02	
FUSION01	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
S96T005103	ALPHA TOTAL $\mu\text{Ci/g}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$		
WB27806	Relative Counting Error = $[(\text{The Square Root of } \text{TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
SEH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	= 7.95E-02	DETECTION LEVEL
SLH			3.11E-03 $\mu\text{Ci/g}$
10/21/96	RELATIVE COUNTING ERROR	12.8%	
10/19/96			
03:00 AM			
B-109			

Analyst:	SLH	Date: 21-Oct-96
Signature of Chemist:	SLF	Date: 10/22/96
SAMPLE WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SPK6

AT : LA-508-101 (E-1) LA-508-113 (A-2) SPIKED SAMPLE

		SPIKE	REPLICATE
	DETECTOR NUMBER	16	16
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
	TOTAL COUNTS (TC)	25902	28571
14084	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.100	0.100
	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1232	2.1232
	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
	SPIKE BOOK NUMBER (Spk BN)	123B43	123B43
96010621	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVol)	3.5866E-02	3.5866E-02
	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2104	0.2104
1	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	8.71E+00	9.60E+00
	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	6.4669E-02	
FUSION01			
S96T005103	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
WB27806	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / ((EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci}))$		
SEH	QC ACTUAL = SVol		
	QC FOUND = $((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))$		
SLF	PERCENT SPIKE RECOVERY = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
SLH			
10/21/96			
10/19/96	QC ACTUAL	=	3.59E-02
	QC FOUND	=	1.93E-02
03:00 AM	AVG. PERCENT SPIKE RECOVERY	=	53.8%
B-109			

Analyst:	SEH	Date: 21-Oct-96
Signature of Chemist:	SLF	Date: 10/22/96
SPIKE WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM7

AT : LA-508-101 (E-1) SOLIDS

		SAMPLE	REPLICATE
	DETECTOR NUMBER	16	16
SAMPLE	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	343	289
14084	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.9204	1.9204
	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	11.363	9.563
96010621	Blank Concentration in $\mu\text{Ci/g}$	1.27E-01	
	Replicate Concentration in $\mu\text{Ci/g}$	1.07E-01	
1	Average Concentration in $\mu\text{Ci/g}$	1.1665E-01	
FUSION01	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
S96T005109	ALPHA TOTAL $\mu\text{Ci/g}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$		
WB27806	Relative Counting Error = $[(\text{The Square Root of } \text{TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
SEH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	1.17E-01
SLH			DETECTION LEVEL
10/21/96	RELATIVE COUNTING ERROR	11.7%	3.52E-03 $\mu\text{Ci/g}$
10/19/96			
03:00 AM			
B-109			

Analyst:	SLH	Date: 21-Oct-96
Signature of Chemist:	SLF	Date: 10/22/96
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP8

AT : LA-508-101 (E-1)

SOLIDS

		DUP	REPLICATE
DUP	DETECTOR NUMBER	16	16
	DISH SIZE (1, 2, or 5) (MS)	2	2
	GROSS COUNTS (GC)	371	405
14084	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.032	2.032
	EFFICIENCY FACTOR (EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	12.297	13.430
96010621	Blank Concentration in $\mu\text{Ci/g}$	1.30E-01	
	Replicate Concentration in $\mu\text{Ci/g}$	1.41E-01	
1	Average Concentration in $\mu\text{Ci/g}$	1.3553E-01	
FUSION01	Rs (Sample Count Rate) = $(\text{TC} / \text{CT}) - \text{BKG}$		
S96T005109	ALPHA TOTAL $\mu\text{Ci/g}$ = $\text{Rs} * 1000\text{mL/L} * \text{DF} / (\text{EFF} * \text{SS} * \text{Dg/L} * 2220000\text{dpm}/\mu\text{Ci})$		
WB27806	Relative Counting Error = $[(\text{The Square Root of } \text{TC} + \text{BKG} * \text{CT}) / (\text{TC} - \text{BKG} * \text{CT})] * 1.96 * 100$		
SEH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	1.36E-01
SLH			DETECTION LEVEL
10/21/96	RELATIVE COUNTING ERROR	10.3%	3.33E-03 $\mu\text{Ci/g}$
10/19/96			
03:00 AM			
B-109			

Analyst:	SLH	Date: 21-Oct-96
Signature of Chemist:	SLF	Date: 10/22/96
SAMPLE WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SPK9

AT : LA-508-101 (E-1) LA-508-113 (A-2) SPIKED SAMPLE

		SPIKE	REPLICATE
	DETECTOR NUMBER	16	16
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
	TOTAL COUNTS (TC)	33758	30584
14084	COUNT TIME in MINUTES (CT)	30	30
	BACKGROUND in cpm (BKG)	0.07	0.07
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.100	0.100
	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.9204	1.9204
	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
	SPIKE BOOK NUMBER (Spk BN)	123B43	123B43
96010621	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	3.5866E-02	3.5866E-02
	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2104	0.2104
1	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	1.25E+01	1.14E+01
	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	1.1665E-01	
FUSION01			
S96T005109	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
WB27806	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
SEH	QC ACTUAL = SVal		
SLF	QC FOUND = $((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))$		
SLH	PERCENT SPIKE RECOVERY = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
10/21/96			
10/19/96	QC ACTUAL	=	3.59E-02
	QC FOUND	=	2.27E-02
03:00 AM	AVG. PERCENT SPIKE RECOVERY	=	63.4%
B-109			

Analyst:	SEH	Date: 21-Oct-96
Signature of Chemist:	SLF	Date: 10/21/96
SPIKE.WB1 Rev. 1.0	508101ML	

LABCORE Completed RadChem Report for Worklist#: 14259

Analyst: jmv

Instrument: AB13

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Use .100 mL sample size (perform boil down). Rerun #1. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		QALPHA01 ALPHA01	SOLID	2.31E-04	2.41E-4	104.329	% Recovery
1 STD	0		QALPHA01 ALPHA01E	SOLID	1.00	3.13E+00	3.130	% Ct. Error
2 BLNK-PREP	0		QALPHA01 ALPHA01	SOLID	1	<2.31E-3		uCi/g
2 BLNK-PREP	0		QALPHA01 ALPHA01E	SOLID	1.00	3.59E+02	359.000	uCi/g
3 BLNK/BKG	0		QALPHA01 ALPHA01	SOLID	1.00E+00	1.66E+00	1.860	BLNK/BKG
4 SAMPLE	S96T005121	0 F	QALPHA01 ALPHA01	SOLID	N/A	2.20E-02	401.0e-005	uCi/g
4 SAMPLE	S96T005121	0 F	QALPHA01 ALPHA01E	SOLID	N/A	2.47E+01	0.0e+000	% Ct. Error
5 DUP	S96T005121	0 F	QALPHA01 ALPHA01	SOLID	2.20E-2	2.16E-2	1.835	RPD
5 DUP	S96T005121	0 F	QALPHA01 ALPHA01E	SOLID	1.00	2.49E+01	24.900	% Ct. Error
6 SPK	S96T005121	0 F	QALPHA01 ALPHA01	SOLID	3.59E-02	1.45E-02	40.390	% Recovery

Final page for worklist# 14259

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

SPK recovery Low due to solids in sample.
No rerun requested.

[Signature] 10/24/96

10/22/96 08:33
A-0004-1

Page: 1

LABCORE Data Entry Template for Worklist# 14259

Analyst: JMV Instrument: AB00 13 Book# 66B56Method: LA-508-101 Rev/Mod E-1

Worklist Comment: Use .100 mL sample size (perform boil down). Rerun #1. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	SOLID		
2	BLNK-PREP				@ALPHA01	SOLID		
3	BLNK/BKG				@ALPHA01	SOLID		
4	SAMPLE	S96T005121	0	F	@ALPHA01	SOLID	96001238	B-109
		Analytes Requested: ALPHA01 , ALPHA01E						
5	DUP	S96T005121	0	F	@ALPHA01	SOLID		
6	SPK	S96T005121	0	F	@ALPHA01	SOLID		

Final page for worklist # 14259

Analyst Signature JMV Date 10-22-96
David C Dunbar 10-22-96Analyst Signature A. C. Kogon Date 10/23/96
C. J. Opner 10/23/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE STD1

AT : LA-508-101 (E-1) LA-508-113 (A-2) STANDARD

	STANDARD	REPLICATE
Type	DETECTOR NUMBER	13
STD	DISH SIZE (1, 2, or 5) (MS)	2
Work List	GROSS COUNTS (GC)	4015
14259	COUNT TIME in MINUTES (CT)	30
At or TB ?	BACKGROUND in cpm (BKG)	0.17
AT	SAMPLE SIZE in mL (SS)	1.000
Test Code	DILUTION FACTOR (DF)	1
@ALPHA01	STANDARD BOOK NUMBER (Std BN)	66B56
Matrix	EFFICIENCY FACTOR (EFF)	0.2477
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE	133.663
Batch Number	Standard Value in $\mu\text{Ci/mL}$	2.31E-04
96010797	Concentration in $\mu\text{Ci/L}$ =	2.43E-01
ReRun	Replicate Concentration in $\mu\text{Ci/L}$ =	2.38E-01
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$ =	2.4071E-01

Sample Prep	N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	WL14269	ALPHA TOTAL $\mu\text{Ci/L}$ = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/ μCi)
Instrument Code	WB27810	ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L}$ / 1000mL/L
Prepared By	SEH	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100
Chemist	SLF	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Analyst	SLF	ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$ =	2.41E-04	DETECTION LEVEL
Analyst	JMV			
Date Complete	10/23/96	RELATIVE COUNTING ERROR	=	3.1%
Analysis Date	10/22/96			8.04E-07 $\mu\text{Ci/mL}$
Analysis Time	11:50 PM			
Sample Point	B-109			

Analyst:	SEH	Date: 23-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96

STANDARD.WB1 Rev. 1.0

508101ML

HNF

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (E-1) SOLIDS

		BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER	13	13
BLNK-PREP	DISH SIZE (1, 2, or 5)	(MS)	2
Work List	GROSS COUNTS	(GC)	12
14269	COUNT TIME in MINUTES	(CT)	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.17
AT	SAMPLE SIZE in mL	(SS)	0.100
Test Code	DILUTION FACTOR	(DF)	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.0068
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477
SOLID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	0.230	0.255
Batch Number			
96010797	Blank Concentration in $\mu\text{Ci/g}$	2.08E-03	
Retun	Replicate Concentration in $\mu\text{Ci/g}$	< 2.31E-03	
0	Maximum Concentration in $\mu\text{Ci/g}$	< 2.3076E-03	
Sample Prep			
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
WL14269			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 2.31E-03	DETECTION LEVEL
Analysis	LESS THAN Value was Determined from Rs.		
JMV			
Date Complete	RELATIVE COUNTING ERROR	358.8%	4.01E-03 $\mu\text{Ci/g}$
10/23/96			
Analysis Date			
10/22/96			
Analysis Time			
11:50 PM			
Sample Point			
B-109			

Analyst:	JMV	Date: 23-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96
BLANK WBT Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM4

AT : LA-508-101 (E-1) SOLIDS

Type	DETECTOR NUMBER	SAMPLE	REPLICATE
SAMPLE	DISH SIZE (1, 2, or 5)	(MS)	13
Work List	GROSS COUNTS	(GC)	2
14269	COUNT TIME in MINUTES	(CT)	79
AT or TB ?	BACKGROUND in cpm	(BKG)	77
AT	SAMPLE SIZE in mL	(SS)	30
Test Code	DILUTION FACTOR	(DF)	0.17
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	0.100
Matrix	EFFICIENCY FACTOR	(EFF)	1
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		2.0068
Batch Number			2.2477
96010797	Blank Concentration in $\mu\text{Ci/g}$		2.463
Rerun	Replicate Concentration in $\mu\text{Ci/g}$		2.397
1	Average Concentration in $\mu\text{Ci/g}$		

Sample Prep	
FUSION01	$R_s \text{ (Sample Count Rate)} = (TC / CT) - BKG$
Sample #	$ALPHA \text{ TOTAL } \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$
S96T005121	
Instrument Code	Relative Counting Error = $[(The \text{ Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By	
SEH	
Chemist	
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) = 2.20E-02
Analyst	
JMV	
Date Complete	
10/23/96	RELATIVE COUNTING ERROR 24.7%
Analysis Date	
10/22/96	
Analysis Time	
11:50 PM	
Sample Point	
B-109	

DETECTION LEVEL
4.01E-03 $\mu\text{Ci/g}$

(/ system.exit)yes-

Analyst:	JMV	Date: 23-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96
SAMPLE WB1 Rev. 1.0	508101ML	

HAF

WORKBOOK PAGE: DUPS

AT : LA-508-101 (E-1)

SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	13	13
DUP	DISH SIZE (1, 2, or 5)	(MS)	2
Work List	GROSS COUNTS	(GC)	79
14259	COUNT TIME in MINUTES	(CT)	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.17
AT	SAMPLE SIZE in mL	(SS)	0.100
Test Code	DILUTION FACTOR	(DF)	1
ALPHA01	DIGEST GRAMS OF SOLIDS / L	(Dg/L)	2.0348
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477
SOLID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE		2.463
Batch Number			2.363
96010797	Blank Concentration in $\mu\text{Ci/g}$		2.20E-02
Run	Replicate Concentration in $\mu\text{Ci/g}$		2.11E-02
1	Average Concentration in $\mu\text{Ci/g}$		2.1568E-02
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	$ALPHA\ TOTAL\ \mu\text{Ci/g} = R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
S96T005121			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	2.16E-02
Analyst			DETECTION LEVEL
JMV			
Date Complete			3.95E-03
10/23/96	RELATIVE COUNTING ERROR		$\mu\text{Ci/g}$
Analysis Date			
10/22/96			
Analysis Time			
11:50 PM			
Sample Point			
B-109			

(/ system.exit()yes-

Analyst:	JMV	Date: 23-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96
SAMPLE WB1 Rev. 1.0	508101ML	

HNF

WORKBOOK PAGE: SPK6

AT : LA-508-101 (E-1) LA-508-113 (A-2) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	13	13
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	27387	20760
14269	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKg)	0.17	0.17
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.100	0.100
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.0068	2.0068
Matrix	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	123B43	123B43
96010797	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	3.5866E-02	3.5866E-02
ReRun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2477	0.2477
1	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	8.27E+00	8.27E+00
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	2.2020E-02	
FUSION01			
Sample #			
S96T005121	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
WB27810	QC ACTUAL = SVal		
Prepared By	QC FOUND = $((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/(SVol*1000)) / (DF/SS/Dg/L)))$		
SEH	PERCENT SPIKE RECOVERY = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
Chemist			
SLF			
Analyst			
JMV			
Date Complete			
10/23/96			
Analysis Date			
10/22/96	QC ACTUAL =	3.59E-02	
Analysis Time	QC FOUND =	1.45E-02	
11:50 PM	AVG. PERCENT SPIKE RECOVERY =	40.5%	
Sample Point			
B-109			

Analyst:	SEH	Date: 23-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96
SPIKE.WB1 Rev. 1.0	508101ML	

LABCORE Completed RadChem Report for Worklist#: 14277

Analyst: jmv

Instrument: AB13

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Use .500 mL sample size (perform boil down). Rerun #1. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0	@ALPHA01 ALPHA01	SOLID	2.31E-04	2.36E-4	102.165	% Recovery
1 STD		0	@ALPHA01 ALPHA01E	SOLID	1.00	3.25E+00	3.250	% Ct. Error
2 BLNK-PREP		0	@ALPHA01 ALPHA01	SOLID	1	<5.14E-4		uCi/g
2 BLNK-PREP		0	@ALPHA01 ALPHA01E	SOLID	1.00	5.00E+02	500.000	uCi/g
3 BLNK/BKG		0	@ALPHA01 ALPHA01	SOLID	1.00E+00	5.43E-01	0.543	BLNK/BKG
4 SAMPLE	S96T005141	0 F	@ALPHA01 ALPHA01	SOLID	N/A	1.32E-02	120.0e-005	uCi/g
4 SAMPLE	S96T005141	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	1.47E+01	0.0e+000	% Ct. Error
5 DUP	S96T005141	0 F	@ALPHA01 ALPHA01	SOLID	1.32E-2	1.63E-2	21.017	RPD
5 DUP	S96T005141	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	1.31E+01	13.100	% Ct. Error
6 SPK	S96T005141	0 F	@ALPHA01 ALPHA01	SOLID	3.59E-02	1.97E-02	54.875	% Recovery
7 SAMPLE	S96T005142	0 F	@ALPHA01 ALPHA01	SOLID	N/A	3.07E-02	111.0e-005	uCi/g
7 SAMPLE	S96T005142	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	8.78E+00	0.0e+000	% Ct. Error
8 DUP	S96T005142	0 F	@ALPHA01 ALPHA01	SOLID	3.07E-2	5.43E-2	55.529	RPD
8 DUP	S96T005142	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	8.09E+00	8.090	% Ct. Error
9 SPK	S96T005142	0 F	@ALPHA01 ALPHA01	SOLID	3.59E-02	2.39E-02	66.574	% Recovery

Final page for worklist# 14277

Analyst Signature

Date

Analyst Signature

Date

Reviewer Signature

Date

sample 5142 Dup/REP mount shows possible contamination sample will be rerun. SPK recovery for 5141 is acceptable due to solids content on mount.

10/24/96

10/22/96 14:57
A-0004-1

HUF
WHC-SD-WM-DP-201, REV. 1

RUSH RUSH

Page: 1

LABCORE Data Entry Template for Worklist# 14277

Analyst: smv Instrument: AB00 13 Book# 66B56

Method: LA-508-101 Rev/Mod E-1

Worklist Comment: Use .500 mL sample size (perform boil down). Rerun #1. SLF

S Type	Sample#	R A	Test	Matrix	Group#	Project
1 STD			@ALPHA01	SOLID		
2 BLNK-PREP			@ALPHA01	SOLID		
3 BLNK/BKG			@ALPHA01	SOLID		
4 SAMPLE	S96T005141 0 F		@ALPHA01	SOLID	96001238	B-109
	Analytes Requested: ALPHA01 , ALPHA01E					
5 DUP	S96T005141 0 F		@ALPHA01	SOLID		
6 SPK	S96T005141 0 F		@ALPHA01	SOLID		
7 SAMPLE	S96T005142 0 F		@ALPHA01	SOLID	96001238	B-109
	Analytes Requested: ALPHA01 , ALPHA01E					
8 DUP	S96T005142 0 F		@ALPHA01	SOLID		
9 SPK	S96T005142 0 F		@ALPHA01	SOLID		

Final page for worklist # 14277

Joseph M. Dulfer 10-23-96
Analyst Signature Date
Joseph M. Dulfer 10-23-96

Sue Hogan 10/24/96
Analyst Signature Date
C.J. Oprian 10/24/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

371

WORKBOOK PAGE STD1

AT : LA-508-101 (E-1) LA-508-113 (A-2) STANDARD

Type	DETECTOR NUMBER	STANDARD	REPLICATE
STD	DISH SIZE (1, 2, or 5)	(MS)	13
Work List	GROSS COUNTS	(GC)	2
14277	COUNT TIME in MINUTES	(CT)	3680
AT or 18 ?	BACKGROUND in cpm	(BKG)	4137
AT	SAMPLE SIZE in mL	(SS)	30
Test Code	DILUTION FACTOR	(DF)	0.43
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	1.000
Matrix	EFFICIENCY FACTOR	(EFF)	1
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		66B56
Batch Number	Standard Value in $\mu\text{Ci/mL}$		66B56
96010817	Concentration in $\mu\text{Ci/L}$		0.2477
Repn	Replicate Concentration in $\mu\text{Ci/L}$		137.470
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$		2.31E-04
Sample Prep			2.22E-01
N/A			2.50E-01
Sample #			2.3614E-01
WL14277			
Instrument Code			
WB27810			
Prepared By			
SEH			
Chemist			
SLF			
Analyst			
JMV			
Date Complete			
10/24/96			
Analysis Date			
10/23/96			
Analysis Time			
12:00 PM			
Sample Point			
B-109			

R_s (Sample Count Rate) = $(TC / CT) \cdot BKG$
 $ALPHA \text{ TOTAL } \mu\text{Ci/L} = R_s \cdot 1000\text{mL/L} \cdot DF / (EFF \cdot SS \cdot 2220000\text{dpm}/\mu\text{Ci})$
 $ALPHA \text{ TOTAL } \mu\text{Ci/mL} = ALPHA \text{ TOTAL } \mu\text{Ci/L} / 1000\text{mL/L}$
 $Relative \text{ Counting Error} = [|(The \text{ Square Root of } TC + BKG \cdot CT) / (TC - BKG \cdot CT)|] \cdot 1.96 \cdot 100$
 Detection Levels and Less Than Values are determined from Procedure LA-508-002.

ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$	=	2.36E-04	DETECTION LEVEL
RELATIVE COUNTING ERROR	=	3.2%	1.18E-06 $\mu\text{Ci/mL}$

Analyst:	SEH	Date: 24-Oct-96
Signature of Chemist	SLF	Date: 10/24/96

STANDARD.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (E-1) SOLIDS

		BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER	13	13
BLNK-PREP	DISH SIZE (1, 2, or 5)	(MS)	2
Work List	GROSS COUNTS	(GC)	9
14277	COUNT TIME in MINUTES	(CT)	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.43
AT	SAMPLE SIZE in mL	(SS)	0.600
Test Code	DILUTION FACTOR	(DF)	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.9756
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477
SOLID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE		0.279
Batch Number			
96010817	Blank Concentration in $\mu\text{Ci/g}$	<	5.14E-04
Replic	Replicate Concentration in $\mu\text{Ci/g}$	<	5.14E-04
0	Maximum Concentration in $\mu\text{Ci/g}$	<	5.1431E-04
Sample Prep			
N/A	Rs (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
WL14277			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	<	5.14E-04
Analyst			
JMV	LESS Than Value was Determined from Lc.		
Date Complete			
10/24/96	RELATIVE COUNTING ERROR	500.0%	1.20E-03 $\mu\text{Ci/g}$
Analysis Date			
10/23/96			
Analysis Time			
12:00 PM			
Sample Point			
B-109			

Analyst:	JMV	Date: 24-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96
BLANK WBT Rev. 1.0	508101ML	

WORKBOOK PAGE SAM4

AT : LA-508-101 (E-1)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	13	13
SAMPLE	DISH SIZE (1, 2, or 5)	(MS)	2
Work List	GROSS COUNTS	(GC)	213
14277	COUNT TIME in MINUTES	(CT)	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.43
AT	SAMPLE SIZE in mL	(SS)	0.500
Test Code	DILUTION FACTOR	(DF)	1
ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.9756
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477
SOLID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	6.670	7.703
Batch Number			
96010817	Blank Concentration in $\mu\text{Ci/g}$	1.23E-02	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	1.42E-02	
1	Average Concentration in $\mu\text{Ci/g}$	1.3231E-02	
Sample Prep			
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s \cdot 1000\text{mL/L} \cdot \text{DF} / (\text{EFF} \cdot \text{SS} \cdot \text{Dg/L} \cdot 2220000\text{dpm}/\mu\text{Ci})$		
S96T005141			
Instrument Code	Relative Counting Error = $[((\text{The Square Root of TC} + \text{BKG} \cdot \text{CT}) / (\text{TC} - \text{BKG} \cdot \text{CT}))] \cdot 1.96 \cdot 100$		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	1.32E-02
Analyst			DETECTION LEVEL
JMV			1.20E-03
Date Complete			$\mu\text{Ci/g}$
10/24/96	RELATIVE COUNTING ERROR	14.7%	
Analysis Date			
10/23/96			
Analysis Time			
12:00 PM			
Sample Point			
B-109			

// system.exit()yes-

Analyst	JMV	Date: 24-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP5

AT : LA-508-101 (E-1)

SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	13	13
DUP	DISH SIZE (1, 2, or 5)	2	2
Work List	GROSS COUNTS	269	297
14277	COUNT TIME in MINUTES	30	30
AT or TB ?	BACKGROUND in cpm	0.43	0.43
AT	SAMPLE SIZE in mL	0.500	0.500
Test Code	DILUTION FACTOR	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	1.9728	1.9728
Matrix	EFFICIENCY FACTOR	0.2477	0.2477
SOLID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	8.203	9.470
Batch Number			
96010817	Blank Concentration in $\mu\text{Ci/g}$	1.51E-02	
ReRun	Replicate Concentration in $\mu\text{Ci/g}$	1.78E-02	
1	Average Concentration in $\mu\text{Ci/g}$	1.6291E-02	
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	$ALPHA \text{ TOTAL } \mu\text{Ci/g} = R_s * 1000 \text{ mL/L} * DF / (\text{EFF} * SS * \text{Dg/L} * 2220000 \text{ dpm/}\mu\text{Ci})$		
S967005141			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	1.63E-02	DETECTION LEVEL
Analyst			
JMV			
Date Complete			1.20E-03
10/24/96	RELATIVE COUNTING ERROR	13.1%	$\mu\text{Ci/g}$
Analysis Date			
10/23/96			
Analysis Time			
12:00 PM			
Sample Point			
B-109			

(/ system.exit)yes-

Analyst:	JMV	Date: 24-Oct-96
Signature of Chemist	SLF	Date: 10/24/96
SAMPLE WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SPKS

AT : LA-508-101 (E-1) LA-508-113 (A-2) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	13	13
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	33010	32397
14277	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.43	0.43
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.500	0.500
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	1.9756	1.9756
Matrx	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	123B43	123B43
96010817	SPIKE VALUE in µCi/mL (SVal)	3.5866E-02	3.5866E-02
Retun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2477	0.2477
1	SAMPLE + SPIKE µCi/g (S+S)	2.02E+00	1.99E+00
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE	1.3231E-02	
FUSION01			
Sample #			
S96T005141			
Instrument Code	Rs (Sample Count Rate) = (TC / CT) - BKG		
WB27810	SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)		
Prepared By	QC ACTUAL = SVal		
SEH	QC FOUND = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/(SVol*1000)))/(DF/SS/Dg/L)))		
Chemist	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100		
SLF			
Analyst			
JMV			
Data Complete			
10/24/96			
Analysis Date			
10/23/96	QC ACTUAL	=	3.59E-02
Analysis Time	QC FOUND	=	1.97E-02
12:00 PM	AVG. PERCENT SPIKE RECOVERY	=	54.9%
Sample Point			
B-109			

Analyst:	SEH	Date: 24-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96

SPIKE.WB1 Rev. 1.0

508101ML

WORKBOOK PAGE: SAM7

AT : LA-508-101 (E-1)

SOLIDS

		SAMPLE	REPLICATE
Type	DETECTOR NUMBER	13	13
SAMPLE	DISH SIZE (1, 2, or 5)	(MS)	2
Work List	GROSS COUNTS	(GC)	571
14277	COUNT TIME in MINUTES	(CT)	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.43
AT	SAMPLE SIZE in mL	(SS)	0.500
Test Code	DILUTION FACTOR	(DF)	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.136
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477
SOLID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE		18.603
Batch Number			17.437
96010817	Blank Concentration in $\mu\text{Ci/g}$		3.17E-02
Rerun	Replicate Concentration in $\mu\text{Ci/g}$		2.97E-02
1	Average Concentration in $\mu\text{Ci/g}$		3.0683E-02
Sample Prep			
FUSION01	R_s (Sample Count Rate) = $(TC \div CT) \cdot BKG$		
Sample #	$\text{ALPHA TOTAL } \mu\text{Ci/g} = R_s \cdot 1000\text{mL/L} \cdot DF / (EFF \cdot SS \cdot Dg/L \cdot 2220000\text{dpm}/\mu\text{Ci})$		
S96T005142			
Instrument Code	Relative Counting Error = $\{ [(The \text{ Square Root of } TC + BKG \cdot CT) / (TC - BKG \cdot CT)] \} \cdot 1.96 \cdot 100$		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	3.07E-02	DETECTION LEVEL
Analyst			
JMV			
Date Complete			1.11E-03
10/24/96	RELATIVE COUNTING ERROR	8.8%	$\mu\text{Ci/g}$
Analysis Date			
10/23/96			
Analysis Time			
12:00 PM			
Sample Point			
B-109			

// system.exit(yes-

Analyst:	JMV	Date: 24-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96

SAMPLE.VWB1 Rev. 1.0

508101ML

WORKBOOK PAGE: DUP8

AT : LA-508-101 (E-1)

SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	13	13
DUP	DISH SIZE (1, 2, or 5)	(MS) 2	2
Work List	GROSS COUNTS	(GC) 624	1309
14277	COUNT TIME in MINUTES	(CT) 30	30
AT or TB ?	BACKGROUND in cpm	(BKG) 0.43	0.43
AT	SAMPLE SIZE in mL	(SS) 0.500	0.500
Test Code	DILUTION FACTOR	(DF) 1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L) 2.1284	2.1284
Matrix	EFFICIENCY FACTOR	(EFF) 0.2477	0.2477
SOLID	Lc, Rmax, or Rs (SAMPLE RATE) as APPROPRIATE	20.370	43.203
Batch Number			
96010817	Blank Concentration in $\mu\text{Ci/g}$	3.48E-02	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	7.38E-02	
1	Average Concentration in $\mu\text{Ci/g}$	6.4318E-02	
Sample Prep			
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s \cdot 1000\text{mL/L} \cdot \text{DF} / (\text{EFF} \cdot \text{SS} \cdot \text{Dg/L} \cdot 2220000\text{dpm}/\mu\text{Ci})$		
S96T005142			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of TC} + \text{BKG} \cdot \text{CT}) / (\text{TC} - \text{BKG} \cdot \text{CT})] \cdot 1.96 \cdot 100$		
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
SEH			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	=	5.43E-02
Analyst			DETECTION LEVEL
JMV			1.11E-03
Date Complete	RELATIVE COUNTING ERROR	8.1%	$\mu\text{Ci/g}$
10/24/96			
Analysis Date			
10/23/96			
Analysis Time			
12:00 PM			
Sample Point			
B-109			

(/ system.exit)yes-

Analyst:	JMV	Date: 24-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96
SAMPLE:WB1 Rev. 1.0 508101ML		

HNF

WORKBOOK PAGE: SPK9

AT : LA-508-101 (E-1) LA-508-113 (A-2) SPIKED SAMPLE

		SPIKE	REPLICATE
Type	DETECTOR NUMBER	13	13
SPK	DISH SIZE 1, 2, or 5 (MS)	2	2
Work List	TOTAL COUNTS (TC)	41765	38341
14277	COUNT TIME in MINUTES (CT)	30	30
AT or TB ?	BACKGROUND in cpm (BKG)	0.43	0.43
AT	SAMPLE VOLUME in mL (Spiked Vial) (SS)	0.500	0.500
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial) (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.136	2.136
MatrD	SPIKE VOLUME in mL (SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR (SDF)	1	1
Batch Number	SPIKE BOOK NUMBER (Spk BN)	123B43	123B43
96010817	SPIKE VALUE in $\mu\text{Ci/mL}$ (SVal)	3.5866E-02	3.5866E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR (EFF)	0.2477	0.2477
1	SAMPLE + SPIKE $\mu\text{Ci/g}$ (S+S)	2.37E+00	2.18E+00
Sample Prep	AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE	3.0683E-02	
FUSION01			
Sample #			
S96T005142	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Instrument Code	SAMPLE + SPIKE $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
WB27810	QC ACTUAL = SVal		
Prepared By	QC FOUND = $((S+S \mu\text{Ci/g} - \text{SAMPLE } \mu\text{Ci/g}) * ((SDF/(SVol*1000)) / (DF/SS/Dg/L)))$		
SEH	PERCENT SPIKE RECOVERY = $(QC \text{ FOUND} / QC \text{ ACTUAL}) * 100$		
Chemist			
SLF			
Analyst			
JMV			
Date Complete			
10/24/96			
Analysis Date			
10/23/96	QC ACTUAL =	3.59E-02	
Analysis Time	QC FOUND =	2.39E-02	
12:00 PM	AVG. PERCENT SPIKE RECOVERY =	66.8%	
Sample Point			
B-109			

Analyst:	SEH	Date: 24-Oct-96
Signature of Chemist:	SLF	Date: 10/24/96

SPIKE.WB1 Rev. 1.0

508101ML

LABCORE Completed RadChem Report for Worklist#: 14329

Analyst: krq Instrument: AB15 Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Use .100 mL sample size. Rerun #2. SLF

Seq Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0		@ALPHA01 ALPHA01	SOLID	2.31E-04	2.47E-4	106.926	% Recovery
1 STD	0		@ALPHA01 ALPHA01E	SOLID	1.00	3.19E+00	3.190	% Ct. Error
2 BLNK-PREP	0		@ALPHA01 ALPHA01	SOLID	1	<2.89E-3		uCi/g
2 BLNK-PREP	0		@ALPHA01 ALPHA01E	SOLID	1.00	5.00E+02	500.000	uCi/g
3 BLNK/BKG	0		@ALPHA01 ALPHA01	SOLID	1.00E+00	1.41E+00	1.410	BLNK/BKG
4 SAMPLE	S96T005142	0 F	@ALPHA01 ALPHA01	SOLID	N/A	4.45E-02	353.0e-005	uCi/g
4 SAMPLE	S96T005142	0 F	@ALPHA01 ALPHA01E	SOLID	N/A	1.79E+01	0.0e+000	% Ct. Error
5 DUP	S96T005142	0 F	@ALPHA01 ALPHA01	SOLID	4.45E-2	4.92E-2	10.032	RPD
5 DUP	S96T005142	0 F	@ALPHA01 ALPHA01E	SOLID	1.00	1.66E+01	16.600	% Ct. Error
6 SPK	S96T005142	0 F	@ALPHA01 ALPHA01	SOLID	3.59E-02	3.04E-02	84.680	% Recovery

Final page for worklist# 14329

Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

25 Oct 96
Reviewer Signature Date

LABCORE Data Entry Template for Worklist# 14329

Analyst: ABO **Instrument:** AB00 15 **Book#** 66056

Method: LA-508-101 **Rev/Mod** _____

Worklist Comment: Use .100 mL sample size. Rerun #2. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	SOLID		
2	BLNK-PREP				@ALPHA01	SOLID		
3	BLNK/BKG				@ALPHA01	SOLID		
4	SAMPLE	S96T005142	0	F	@ALPHA01	SOLID	96001238	B-109
		Analytes Requested: ALPHA01 , ALPHA01E						
5	DUP	S96T005142	0	F	@ALPHA01	SOLID		
6	SPK	S96T005142	0	F	@ALPHA01	SOLID		

Final page for worklist # 14329

[Signature]
Analyst Signature **Date** 10/25/96

[Signature]
Analyst Signature **Date** 10/25/96

C.F. Quinn 10/25/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE: STD1

AT : LA-508-101 (E-1) LA-508-113 (A-2) STANDARD

		STANDARD	REPLICATE
Typ	DETECTOR NUMBER	15	15
STD	DISH SIZE (1, 2, or 5)	(MS)	2
Work Unit	GROSS COUNTS	(GC)	4060
14329	COUNT TIME in MINUTES	(CT)	30
or BKG	BACKGROUND in cpm	(BKG)	0.13
AT	SAMPLE SIZE in mL	(SS)	1.000
Test Code	DILUTION FACTOR	(DF)	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	66B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		135.203
Batch Number	Standard Value in $\mu\text{Ci/mL}$		2.31E-04
96010871	Concentration in $\mu\text{Ci/L}$	=	2.56E-01
Rerun	Replicate Concentration in $\mu\text{Ci/L}$	=	2.39E-01
0	AVERAGE CONCENTRATION in $\mu\text{Ci/L}$	=	2.4741E-01

Sample Prep: N/A
 Sample #: WL14329-STD
 Instrument Code: WB26872
 Prepared By: MCB
 Chemist: SLF
 Analyst: KRQ
 Date Complete: 10/25/96
 Analysis Date: 10/25/96
 Analysis Time: 04:00 AM
 Sample Point: B-109

Rs (Sample Count Rate) = $(TC / CT) - BKG$
 ALPHA TOTAL $\mu\text{Ci/L}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * 2220000\text{dpm}/\mu\text{Ci})$
 ALPHA TOTAL $\mu\text{Ci/mL}$ = ALPHA TOTAL $\mu\text{Ci/L} / 1000\text{mL/L}$
 Relative Counting Error = $[|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100$
 Detection Levels and Less Than Values are determined from Procedure LA-508-002.

ALPHA TOTAL CONCENTRATION in $\mu\text{Ci/mL}$	=	2.47E-04	DETECTION LEVEL
			7.53E-07 $\mu\text{Ci/mL}$
RELATIVE COUNTING ERROR	=	3.2%	

Analyst:	MCB	Date: 25-Oct-96
Signature of Chemist:	SLF	Date: OCT 25 1996

STANDARD WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (E-1)

SOLIDS

		BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER	15	15
BLNK-PREP	DISH SIZE (1, 2, or 5) (MS)	2	2
Worklist	GROSS COUNTS (GC)	8	3
14329	COUNT TIME in MINUTES (CT)	30	30
AT on TB 2	BACKGROUND in cpm (BKG)	0.13	0.13
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
Test Code	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.136	2.136
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	0.326	0.154
Batch Number			
96010871	Blank Concentration in $\mu\text{Ci/g}$	< 2.89E-03	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	< 1.36E-03	
0	Maximum Concentration in $\mu\text{Ci/g}$	< 2.8921E-03	
Sample Prep			
N/A	R_s (Sample Count Rate) = $(TC / CT) - BKG$		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $R_s * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$		
WL14329-BLNK			
Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Maximum) =	< 2.89E-03	DETECTION LEVEL
Analyst	LESS THAN Value was Determined from Rmax.		
KRQ			3.53E-03
Date Complete	RELATIVE COUNTING ERROR	500.0%	$\mu\text{Ci/g}$
10/25/96			
Analysis Date			
10/25/96			
Analysis Time			
04:00 AM			
Sample Point			
B-109			

Analyst:	KRQ	Date: 25-Oct-96
Signature of Chemist:	SLF	Date: 06/25/96
BLANK.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SAM4

AT : LA-508-101 (E-1)

SOLIDS

		SAMPLE	REPLICATE
DETECTOR NUMBER		15	15
SAMPLE	DISH SIZE (1, 2, or 5)	(MS)	2
Work List	GROSS COUNTS	(GC)	178
14329	COUNT TIME in MINUTES	(CT)	30
AT or TB?	BACKGROUND in cpm	(BKG)	0.13
AT	SAMPLE SIZE in mL	(SS)	0.100
Test Code	DILUTION FACTOR	(DF)	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.136
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		5.803
Batch Number			4.237

96010871	Blank Concentration in $\mu\text{Ci/g}$	5.14E-02
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	3.75E-02
2	Average Concentration in $\mu\text{Ci/g}$	4.4481E-02

Sample Prep	
FUSION01	Rs (Sample Count Rate) = $(TC / CT) - BKG$
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = $Rs * 1000\text{mL/L} * DF / (EFF * SS * Dg/L * 2220000\text{dpm}/\mu\text{Ci})$
S96T005142	

Instrument Code	Relative Counting Error = $[(\text{The Square Root of } TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100$
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Prepared By		
MCB		
Chemist		
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average)	= 4.45E-02
Analyst		DETECTION LEVEL
KRQ		
Date Complete		3.53E-03
10/25/96	RELATIVE COUNTING ERROR	17.9%
Analysis Date		$\mu\text{Ci/g}$
10/25/96		
Analysis Time		
04:00 AM		
Sample Point		
B-109		

Analyst:	KRQ	Date: 25-Oct-96
Signature of Chemist:	SLF	Date: OCT 25 1996
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: DUP5

AT : LA-508-101 (E-1)

SOLIDS

		DUP	REPLICATE
Type	DETECTOR NUMBER	15	15
DUP	DISH SIZE (1, 2, or 5) (MS)	2	2
Work List	GROSS COUNTS (GC)	189	151
14329	COUNT TIME in MINUTES (CT)	30	30
Alpha B?	BACKGROUND in cpm (BKG)	0.13	0.13
AT	SAMPLE SIZE in mL (SS)	0.100	0.100
96010871	DILUTION FACTOR (DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS / L (Dg/L)	2.1284	2.1284
Matrix	EFFICIENCY FACTOR (EFF)	0.2380	0.2380
SOLID	Lc, Rmax, or Rs, (SAMPLE RATE) as APPROPRIATE	6.170	4.903
Batch Number			
96010871	Blank Concentration in $\mu\text{Ci/g}$	5.49E-02	
Rerun	Replicate Concentration in $\mu\text{Ci/g}$	4.36E-02	
2	Average Concentration in $\mu\text{Ci/g}$	4.9234E-02	
Sample Prep			
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG		
Sample #	ALPHA TOTAL $\mu\text{Ci/g}$ = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/ μCi)		
S96T005142			
Instrument Code	Relative Counting Error = [(The Square Root of TC + BKG * CT) / (TC - BKG * CT)] * 1.96 * 100		
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.		
Prepared By			
MCB			
Chemist			
SLF	ALPHA TOTAL in $\mu\text{Ci/g}$ (Average) =	4.92E-02	DETECTION LEVEL
Analyst			
KRQ			
Date Complete			3.54E-03
10/25/96	RELATIVE COUNTING ERROR	16.6%	$\mu\text{Ci/g}$
Analysis Date			
10/25/96			
Analysis Time			
04:00 AM			
Sample Point			
B-109			

Analyst:	KRQ	Date: 25-Oct-96
Signature of Chemist:	<i>SLF</i>	Date: OCT 25 1996
SAMPLE.WB1 Rev. 1.0	508101ML	

WORKBOOK PAGE: SPK6

AT : LA-508-101 (E-1) LA-508-113 (A-2) SPIKED SAMPLE

		SPIKE	REPLICATE
Detector Number		15	15
SPK			
DISH SIZE	1, 2, or 5 (MS)	2	2
Work Item			
TOTAL COUNTS	(TC)	46203	50575
14329			
COUNT TIME in MINUTES	(CT)	30	30
Aluminum			
BACKGROUND in cpm	(BKG)	0.13	0.13
AT			
SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.100	0.100
Instrument Code			
SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1	1
@ALPHA01			
DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.136	2.136
Matrix			
SPIKE VOLUME in mL	(SVol)	0.100	0.100
SOLID			
SPIKE DILUTION FACTOR	(SDF)	1	1
Batch Number			
SPIKE BOOK NUMBER	(Spk BN)	123B43	123B43
96010871			
SPIKE VALUE in $\mu\text{Ci/mL}$	(SVal)	3.5865E-02	3.5865E-02
Return			
INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.238	0.238
2			
SAMPLE + SPIKE $\mu\text{Ci/g}$	(S+S)	1.36E+01	1.49E+01
Sample Prep			
AVERAGE or MAXIMUM $\mu\text{Ci/g}$ in SAMPLE		4.4481E-02	
FUSION01			
Sample #			
S96T005142			
Instrument Code			
WB26872			
Prepared By			
MCB			
Chemist			
SLF			
Analyst			
KRQ			
Date Complete			
10/25/96			
Analysis Date			
10/25/96			
QC ACTUAL	=	3.59E-02	
QC FOUND	=	3.04E-02	
Analysis Time			
04:00 AM			
AVG. PERCENT SPIKE RECOVERY	=	84.8%	
Sample Point			
B-109			

Analyst:	MCB	Date: 25-Oct-96
Signature of Chemist:	<i>SLF</i>	SLF Date: OCT 25 1996
SPIKE.WB1 Rev. 1.0	508101ML	

LABCORE Data Entry Template for Worklist# 13810

Analyst: ADP Instrument: BA001 Book # 133N16A

Method: LA-510-112 Rev/Mod C-3

Worklist Comment: B-109 SPG. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			SPG-01	LIQUID	<u>1.391</u>	<u>1.391</u>	<u>N/A</u>	Sp.G.
96001238	B-109	2 SAMPLE	S96T005116	0	SPG-01	LIQUID	<u>N/A</u>	<u>.990</u>	<u>0.010</u>	Sp.G.
96001238	B-109	3 DUP	S96T005116	0	SPG-01	LIQUID	<u>.990</u>	<u>1.002</u>	<u>N/A</u>	Sp.G.

Final page for worklist # 13810

Anthony Purinton 12-3-96
Analyst Signature Date

Susan Bu 12/3/96
Analyst Signature Date

Approved R.W. Schvedy
12/5/96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

SPECIFIC GRAVITY: LA-510-112 (C-3)

WORKLIST

#

ANALYST

INITIALS

ANALYSIS

DATE

ANALYSIS

TIME

INSTRUMENT

CODE

13810

ADD

12-3-96

0700

☒ SAMPLE
☐ STANDARD

☐ DUPLICATE

SAMPLE # =

STD # = 133N16A

TARE WEIGHT (g) 1.8039
GROSS WEIGHT (g) 1.9431
VOL of SOLUTION (mL) 1.0012

REPLICATE
1.8773
2.0106
1.0012

☒ SAMPLE
☐ STANDARD

☐ DUPLICATE

SAMPLE # = 596T005116

STD # =

TARE WEIGHT (g) 1.8196
GROSS WEIGHT (g) 1.9187
VOL of SOLUTION (mL) 1.0012

REPLICATE
1.0012
ADD

☐ SAMPLE
☐ STANDARD

☒ DUPLICATE

SAMPLE # = 596T005116

STD # =

TARE WEIGHT (g) 1.8293
GROSS WEIGHT (g) 1.9296
VOL of SOLUTION (mL) 1.0012

REPLICATE

☐ SAMPLE
☐ STANDARD

☐ DUPLICATE

SAMPLE # =

STD # =

TARE WEIGHT (g) _____
GROSS WEIGHT (g) _____
VOL of SOLUTION (mL) _____

REPLICATE

☐ SAMPLE
☐ STANDARD

☐ DUPLICATE

SAMPLE # =

STD # =

TARE WEIGHT (g) _____
GROSS WEIGHT (g) _____
VOL of SOLUTION (mL) _____

REPLICATE

☐ SAMPLE
☐ STANDARD

☐ DUPLICATE

SAMPLE # =

STD # =

TARE WEIGHT (g) _____
GROSS WEIGHT (g) _____
VOL of SOLUTION (mL) _____

REPLICATE

☐ SAMPLE
☐ STANDARD

☐ DUPLICATE

SAMPLE # =

STD # =

TARE WEIGHT (g) _____
GROSS WEIGHT (g) _____
VOL of SOLUTION (mL) _____

REPLICATE

☐ SAMPLE
☐ STANDARD

☐ DUPLICATE

SAMPLE # =

STD # =

TARE WEIGHT (g) _____
GROSS WEIGHT (g) _____
VOL of SOLUTION (mL) _____

REPLICATE

H.N.E.
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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

STD		STD	REPLICATE
	Gross Weight (W2)	1.9431	2.0166
	Tare Weight (W1)	1.8039	1.8773
13810	Weight of Solution (W2-W1)	0.1392	0.1393
	Volume of Solution μ L	100.1200	100.1200
SPG-01	Specific Gravity	1.3903	1.3913
	Specific Gravity (Average)	1.3908	
LIQUID			
STD			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
12/03/96	v RESULT v		
	Specific Gravity Average =	1.391	
07:00 AM			

Data Entry by:	Sue Bee	Date:	12/03/96
Approved by:	Rui Schneider	Date:	12/5/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9187	
	Tare Weight (W1)	1.8196	
	Weight of Solution (W2-W1)	0.0991	0
	Volume of Solution μ L	100.1200	
	Specific Gravity	0.9898	NA
LIQUID			
S96T005116			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution		
	Tare Weight (W1) = Wt. of vial + cap + cotton		
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L}/\text{mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
12/03/96	v RESULT v		
	Specific Gravity =		0.990
07:00 AM			

Data Entry by:	<i>Sue Bee</i>	Date:	12/03/96
Approved by:	<i>R. W. Schmidt</i>	Date:	12/5/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

SPECIFIC GRAVITY : LA-510-112 (C-3)

		SAMPLE	REPLICATE
SAMPLE	Gross Weight (W2)	1.9296	
	Tare Weight (W1)	1.8293	
	13810 Weight of Solution (W2-W1)	0.1003	0
	Volume of Solution μ L	100.1200	
	SPG-01 Specific Gravity	1.0018	NA
LIQUID			
S96T005116 DUP			
BA001	Gross Weight (W2) = Wt. of vial + cap + cotton + solution Tare Weight (W1) = Wt. of vial + cap + cotton		
ADP	Specific Gravity = $[(W2-W1) * 1000 \mu\text{L/mL}] / [\text{Vol. of Solution } \mu\text{L} * 1.000 \text{ g/mL}]$		
12/03/96	v RESULT v		
07:00 AM	Specific Gravity =	1.002	

Data Entry by:	<i>Sue Bee</i>	Date:	12/03/96
Approved by:	<i>Rui Schneider</i>	Date:	12/5/96

Form 510112L1 Rev. 1.1 Page 1 of 1

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ANALYTICAL SERVICES

TANK 241-B-109, CORES 169 AND 170
ANALYTICAL RESULTS FOR THE 45 DAY REPORT

Project Coordinator: JENNIFER L. NUZUM

Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management

by

222-S Laboratory
Rust Federal Services of Hanford Inc.
P.O. Box 700
Richland, Washington

2-i

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NARRATIVE

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222-S ANALYTICAL SERVICES

TANK 241-B-109, CORES 169 AND 170,
ANALYTICAL RESULTS FOR THE 45 DAY REPORT

Summary

This document is the 45-day laboratory report for tank 241-B-109. Push mode core segments were removed from risers 4 and 7 between August 22, 1996, and August 27, 1996. Segments were received and extruded at 222-S Laboratory Operations. Analyses were performed in accordance with *Tank 241-B-109 Rotary Mode Core Sampling and Analysis Plan* (TSAP) (Kruger, 1996) and *Safety Screening Data Quality Objective* (DQO) (Dukelow, et al., 1995).

None of the subsamples submitted for total alpha activity (AT) or differential scanning calorimetry (DSC) analyses exceeded the notification limits stated in DQO.

Primary safety screening results are included in the data summary table (Table 1). The raw data from DSC and TGA analyses are included in this report.

Appearance and Sample Handling

Two cores of three segments were expected from this tank. Sampling problems prevented the acquisition of complete cores.

Attachment 1 illustrates subsamples generated in the laboratory for analysis and identifies their sources. This reference also relates tank farm identification numbers to their corresponding 222-S Laboratory Information Management System (LIMS) sample numbers.

Core 169

Segments 1, 2, and 2A were removed from Tank 241-B-109 Riser 7 between August 22, 1996, and August 23, 1996. All segments were received by 222-S Laboratory Operations between September 6, 1996, and September 10, 1996. All extrusion resulted in sample recoveries of 5.5 inches or less. Table 2 summarizes extrusion information.

Core 170

Segments 1, 2, and 3 were removed from Tank 241-B-109 Riser 4 between August 23, 1996, and August 27, 1996. All segments were received by 222-S Laboratory Operations on September 6, 1996. Extrusions of Segments 1 and 3 resulted in low recoveries of 4.0 inches and 0.25 inches, respectively. Table 3 summarizes extrusion information.

Field Blank

A field blank was provided to 222-S Laboratory Operations with Core 170. This sample was treated as a drainable liquid in accordance with TSAP.

Hydrostatic Head Fluid Blank

A sample of hydrostatic head fluid (LiBr solution) was provided to 222-S Laboratory Operations with Core 170. This sample was analyzed by ion chromatography and inductively coupled plasma spectroscopy. The sample will be reported in a revision to this document.

Table 2. Sample Receipt and Extrusion Information for B-109, Core 169.

Customer Id	Segment	Date Sampled	Date Received	Date Fainted	Date Fainted*	Liquid Recovered (g)	Solids Recovered (g)	Sample Description
96-191	1	8/22/96	9-06-96	9-16-96	1.5	0.0	16.0-Lower Half	Solids were gray to black and resembled a dry salicac.
96-192	2	8/23/96	9-16-96	9-16-96	5.5	0.0	142.5-Lower Half	Solids were yellow to brown and resembled a moist salicac.
96-192A	2A	8/23/96	9-06-96	9-17-96	0.5	0.0	7.1-Lower Half	Solids were light brown and resembled a moist salicac.

* Approximate laches Extruded

Table 3. Sample Receipt and Extrusion Information for B-109, Core 170.

Customer Id	Segment	Date Sampled	Date Received	Date Extruded	Inches Extruded*	Liquid Recovered (g)	Solids Recovered (g)	Sample Description
Field Blank	Field Blank	8/27/96	9/06/96	9/16/96	0.0	251.8--drainable	0.0	Drainable liquid was clear and colorless.
Labr Blank	N/A	8/26/96	9/06/96	N/A	N/A	N/A	N/A	Hydrostatic head fluid blank. Analyzed for lithium and bromide ions only.
96-494	1	8/23/96	9/06/96	9/16/96	4.0	0.0	72.2--Lower Half	Solids were pale yellow to brown and resembled a dry saltcake.
96-495	2	8/27/96	9/06/96	9/16/96	18.9	0.0	22.1--Qtr. Seg. A 28.1 0--Qtr. Seg. B 71.6--Qtr. Seg. C 50.2--Qtr. Seg. D	Top quarter A was light yellow and resembled a wet saltcake. Quarter B was yellow and resembled a salt slurry. Quarter C was dark brown and resembled a wet saltcake. Bottom quarter D was light green and resembled a wet saltcake.
96-496	3	8/27/96	9/06/96	9/17/96	0.25	0.0	6.2--Upper Half	Solids were light brown and resembled a moist saltcake.

*Approximate Inches Extruded

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Analytical Results Summary

The data summary table (Table 1) included in this report compiles safety screening analytical results and applicable notification limits associated with each subsample submitted.

Core 169, Upper Half Segment 2A (S96T005111) and Core 170, Upper Half Segment 3 (S96T005123) were not homogenized due to an insufficient amount of sample. The samples, in their entirety, were used for laboratory analysis.

Differential Scanning Calorimetry (DSC) Analysis

None of the subsamples submitted for DSC analyses exceeded the notification limits set forth in TSAP. Statistical evaluation of the results by calculating the 95% upper confidence limit is not performed by 222-S Laboratory Operations and, thus, not considered in this report.

DSC analyses were performed in duplicate on direct subsamples. The exothermic energy, based on dry weight of subsample, was calculated for all subsamples. The average of the thermogravimetric analysis (TGA) results for each subsample was used in the dry weight correction for that subsample.

The field blank average result was 0.00 J/g. Standard recovery and relative percent difference (RPD) criterion was met for all ten subsamples.

Thermogravimetric Analysis (TGA)

TGA was performed in duplicate on direct subsamples. Results were typically determined by summing weight loss steps below 200°C. Weight loss steps above this were not used to determine the result. More information may be obtained by examining the raw data.

RPD between sample and duplicate exceeded 20% on one of ten subsamples. Upper Half Segment 2A of Core 169 (S96T005112) was reported with a RPD of 38.0%. Poor precision was caused by sample heterogeneity (the sample was not homogenized), so further TGA of this sample is not likely to show improvement. No rerun was requested. A second analysis of Core 169, Lower Half Segment 2 (S96T005108) was performed (denoted by a "1" in the replicate(R) column of Table 1) due to differences in appearance of the thermograms between the sample and duplicate. These differences were not seen in the second analysis. The results for both analyses are presented in Table 1.

Standard recovery criterion was met for all subsamples.

Density

Bulk density analysis was performed on three of the nine solid subsamples. As required by TSAP, bulk density was requested only on lower-half segments. Segment 2 of Core 170 was subsampled in quarter segments, and bulk density analysis was performed for the lower two subsegments. Bulk density was not determined for Segment 1 of Core 170 (S96T005118) due to subsample dryness. There was not enough sample to analyze Segment 1 of Core 169 (S96T005101).

Results from bulk density tests ranged from 1.83 g/mL to 1.95 g/mL. The highest bulk density value of 1.95 g/mL was used to calculate the solid total alpha activity notification limit for this tank (31.6 $\mu\text{Ci/g}$).

Total alpha results for liquids do not require a correction for density. Specific gravity results for the liquid subsamples will be reported in a revision to this document.

Total Alpha (AT) Analysis

Liquid AT results were below the total alpha activity notification limit of 61.5 $\mu\text{Ci/mL}$. All solid AT results were below the total alpha activity notification limit of 32.6 $\mu\text{Ci/g}$ (based on a bulk density of 1.95 g/mL).

AT analyses were performed in duplicate on direct subsamples for liquids. Solid subsamples were prepared for analysis by performing a fusion digest in duplicate. This fusion digest is indicated by the presence of an "F" in the aliquot class column (A#) in Table 1. As required by TSAP, AT analyses were requested for lower half segments only. Segment 2 of Core 170 was subsampled into quarter segments, and AT analysis was requested for the lower two subsegments.

RPD between sample and duplicate exceeded 20% for two of six subsamples. Core 170, Segment 2, Quarter Segment C (S96T005141) and Core 169, Lower Half Segment 1 (S96T005103) had RPDs of 21% and 20.5%, respectively. Count replicates and similar rerun results in comparison to original analyses indicate high RPD is due to low sample alpha activity and sample heterogeneity. Low spike recoveries were reported for four of six subsamples, and were the effect of self-absorption by solids left on the planchet after drying. Second analysis of these subsamples did not improve spike recovery. Continuing reruns were not requested.

The field blank result was $<9.93\text{E-}7$ $\mu\text{Ci/mL}$. Standard recovery criterion was met for all subsamples.

Procedures

Table 4 lists the analytical procedures used for performing sample analyses. Abbreviations for analyses are defined in the table notes.

Table 4. Analytical Procedures

Analysis	Sample Portion	Preparation Procedure +	Analysis Procedure
DSC	Solid/Liquid	N/A	LA-514-113, Rev. C-1 LA-514-114, Rev. D-0
TGA	Solid/Liquid	N/A	LA-514-114, Rev. D-0 LA-560-112, Rev. C-0
AT	Solid Liquid	LA-549-141, Rev. F-0 N/A	LA-508-101, Rev. E-1
Bulk Density	Solid	N/A	LO-160-103, Rev. B-0

Notes:

+ = preparation procedure is for fusion digest on solid

Abbreviations:

N/A = not applicable (these are direct subsamples)

DSC = differential scanning calorimetry

TGA = thermogravimetric analysis

AT = total alpha activity

WHC-SD-WM-DP-201, REV. 0

References

Dukelow, G.T., J.W. Hunt, H. Babad, and J.E. Meacham, 1995, *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, WA 99352

Field, J.G., 1996, *Tank 241-B-109 Rotary Mode Core Sampling and Analysis Plan*, WHC-SD-WM-TSAP-087, Rev. 1, Westinghouse Hanford Company, Richland, WA 99352

HNF
~~WHC~~-SD-WM-DP-201, REV. 1

WHC-SD-WM-DP-201, REV. 0

ATTACHMENT 1

B-109 SAMPLE BREAKDOWN

HNF
WHC-SD-WM-DP-201, REV. 1

WHC-SD-WM-DP-201, REV. 0

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B-109
Core:169
Seg: 1 (96-491)
S96T004927

Attachment 1
Page 1 of 8

Lower
Half

HOMGN201
ARCHIV01

S96T005101

SAMPANT1
DOSE-01
@TIC-001
DSC-01
DSC-02
TGA-01

S96T005102

FUSION01
DOSE-02
@ICP-F01
@ALPHA01

S96T005103

H0901081
DOSE-02
@IC-01

S96T005104

WHC-SD-WM-DP-201, REV. 0
WHC-SD-WM-DP-201, REV. 1
WHC-SD-WM-DP-201, REV. 1

B-109
Core:169
Seg: 2 (96-492)
S96T004934

Attachment 1
Page 2 of 8

WHC-SD-WM-DP-201, REV. 1
WHC-SD-WM-DP-201, REV. 0

2-14

B-109
Core:169
Seg: 2A (96-492A)
S96T004928

Attachment 1
Page 3 of 8

Upper
Half

S96T005111

SAMPMT1
DOSE-01
@TIC-TOC1
OSC-01
OSC-02
TGA-01

S96T005112

2-15

FUSION01
DOSE-02
@ICP-F01

S96T005113

H200K001
DOSE-02
@IC-01

S96T005114

WHC-SD-MM-DP-201, REV. 0
WHC-SD-MM-DP-201, REV. 1
INJF

B-109
Core:170
Seg: HHF (LiBr Blank)
S96T004933

Attachment 1
Page 4 of 8

IC
ICP

2-16

11/21/11
WHG-SD-MM-DP-201, REV. 1
WHC-SD-MM-DP-201, REV. 0

B-109
Core:170
Seg: Field Blank
S96T004929

Attachment 1
Page 5 of 8

2-17

WHC-SD-WM-DP-201, REV. 0
WHC-SD-WM-DP-201, REV. 1
HNE

B-109
Core:170
Seg: 1 (96-494)
S96T004930

Attachment 1
Page 6 of 8

WHC-SD-WM-DP-201, REV. 0

WHC-SD-WM-DP-201, REV. 1

B-1092
Core:170
Seg: 2 (96-495)
S96T004931

Attachment 1
Page 7 of 8

B-109

Core:170

Seg: 3 (96-496)

S96T004932

Attachment 1
Page 8 of 8

WHC-SD-WM-DP-201, REV. 0

WHC-SD-WM-DP-201, REV. 1
HNT

Upper
Half

S96T005123

-20

SAMPALITI
DOSE-01
@IC-TOCT
DOSE-01
DOSE-02
TGA-01

S96T005124

FUSION01
DOSE-02
@IC-101

S96T005125

H200G01
DOSE-02
@IC-01

S96T005126

HNF
~~WHC~~-SD-WM-DP-201, REV. 1

WHC-SD-WM-DP-201, REV. 0

SAMPLE DATA SUMMARY

HNF
WHC-SD-WM-DP-201, REV. 1

WHC-SD-WM-DP-201, REV. 0

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Table 1. Data Summary Table
B-109

CORE NUMBER: 169
SEGMENT #: 2A

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005112			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	93.15	n/a	90.90	89.60	90.25	1.44	n/a	n/a	n/a
S96T005112			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	1.10e+02	109.0	109.5	0.91	n/a	n/a	n/a
S96T005112			% Water by TGA using Mettler	%	None	None	100.8	n/a	14.27	20.96	17.62	38.0	n/a	n/a	n/a

=> Limit violated

=> Selected Limit

-23

WHC-SD-WM-DP-201, REV. 0
HSE
WHC-SD-WM-DP-201, REV. 1

Table 1. Data Summary Table
B-109

CORE NUMBER: 169
SEGMENT #: 1

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005102			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	88.58	n/a	49.40	46.00	47.70	7.13	n/a	n/a	n/a
S96T005102			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	89.20	83.10	86.15	7.08	n/a	n/a	n/a
S96T005102			% Water by TGA using Mettler	%	None	None	98.82	n/a	44.45	44.79	44.62	0.76	n/a	n/a	n/a
S96T005103	F		Alpha of Digested Solid	uCi/g	-1.0e+00	31.60	88.31	<2.45e-03	6.47e-02	7.95e-02	7.21e-02	20.5	53.76	3.00e-03	1.50E+01

=> Limit violated
=> Selected Limit

WHC-SD-WM-DP-201, REV. 0
WHC-SD-WM-DP-201, REV. 1
INTE

2-24

Table 1. Data Summary Table
B-109

CORE NUMBER: 169
SEGMENT #: 2

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005107			Bulk Density of Sample	g/mL	None	None	n/a	n/a	1.850	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T005108			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	88.58	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	*
S96T005108			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005108			% Water by TGA using Mettler	%	None	None	98.82	n/a	65.41	43.79	54.60	39.6	n/a	n/a	n/a
S96T005108	1		% Water by TGA using Mettler	%	None	None	99.64	n/a	44.81	46.80	45.80	4.34	n/a	n/a	n/a
S96T005109	F		Alpha of Digested Solid	uCi/g	-1.0e+00	31.60	88.31	<2.45e-03	1.17e-01	1.36e-01	1.27e-01	15.0	63.23	4.00e-03	1.17E+01

=> Limit violated

=> Selected Limit

WHC:SD-WM-DP-201, REV.1
H2C

WHC:SD-WM-DP-201, REV.0

2-25

Table 1. Data Summary Table
B-109

CORE NUMBER: 170
SEGMENT #: Field Blank

SEGMENT PORTION: Field Blank

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005116			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	97.36	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005116			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005116			% Water by TGA using Mettler	%	None	None	99.93	n/a	1.02e+02	100.0	101.0	1.98	n/a	n/a	n/a
S96T005116			Alpha in Liquid Samples	uCi/mL	-1.0e+00	61.50	93.51	<5.34e-07	<9.93e-07	<6.60E-7	n/a	n/a	100.3	1.25e-06	5.00E+02

=> Limit violated

=> Selected Limit

2-26

WHC-SD-WM-DP-201, REV. 0
WHC-SD-WM-DP-201, REV. 1
HNE

Table 1. Data Summary Table
B-109

CORE NUMBER: 170
SEGMENT #: 1

SEGMENT PORTION: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005118			Bulk Density of Sample	g/mL	None	None	n/a	n/a	na	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T005119			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005119			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	99.05	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005119			% Water by TGA using Mettler	%	None	None	100.1	n/a	40.79	39.11	39.95	4.21	n/a	n/a	n/a
S96T005121	F		Alpha of Digested Solid	uCi/g	-1.0e+00	31.60	104.3	<2.31e-03	2.26e-02	2.16e-02	2.18e-02	1.83	40.39	4.00e-03	2.47E+01

=> Limit violated

=> Selected Limit

WHC-SD-WM-DP-201, REV. 0

WHC-SD-WM-DP-201, REV. 1
HNF

2-27

Table 1. Data Summary Table
B-109

CORE NUMBER: 170
SEGMENT #: 2

SEGMENT PORTION: A Top Quarter of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005131			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005131			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	99.05	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005131			% Water by TGA using Mettler	%	None	None	100.1	n/a	44.85	44.25	44.55	1.35	n/a	n/a	n/a

B Second Quarter of Segment: B Second Quarter of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005132			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005132			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	100.5	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005132			% Water by TGA on Perkin Elmer	%	None	None	98.89	n/a	43.63	49.35	46.49	12.3	n/a	n/a	n/a

C Third Quarter of Segment: C Third Quarter of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005129			Bulk Density of Sample	g/ml	None	None	n/a	n/a	1.830	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T005135			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005135			DSC Exotherm on Perkin Elmer	Joules/g	-1.0e+00	480.0	100.5	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005135			% Water by TGA on Perkin Elmer	%	None	None	98.89	n/a	47.64	41.66	44.65	13.4	n/a	n/a	n/a
S96T005141	F		Alpha of Digested Solid	uCi/g	-1.0e+00	31.60	102.2	<5.14e-04	1.32e-02	1.63e-02	1.47e-02	21.0	54.87	1.00e-03	1.47E+01

D Bottom Quarter of Segment: D Bottom Quarter of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005130			Bulk Density of Sample	g/ml	None	None	n/a	n/a	1.940	n/a	n/a	n/a	n/a	5.00e-01	n/a
S96T005136			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	101.2	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005136			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005136			% Water by TGA using Mettler	%	None	None	100.2	n/a	25.81	28.44	26.12	17.7	n/a	n/a	n/a
S96T005142	F		Alpha of Digested Solid	uCi/g	-1.0e+00	31.60	106.9	<2.89e-03	4.45e-02	4.92e-02	4.69e-02	10.0	84.68	4.00e-03	1.79E+01

=> Limit violated
=> Selected Limit

WHO-SD-WM-DP-201, REV. 0
HNE
WHO-SD-WM-DP-201, REV. 1

2-28

Table 1. Data Summary Table
B-109

CORE NUMBER: 170
SEGMENT #: 3

SEGMENT PORTION: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits		Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
					Lower	Upper									
S96T005124			DSC Exotherm using Mettler	Joules/g	-1.0e+00	480.0	93.15	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005124			DSC Exotherm Dry Calculated	Joules/g Dry	-1.0e+00	480.0	n/a	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S96T005124			% Water by TGA using Mettler	%	None	None	100.8	n/a	25.76	22.68	24.22	12.7	n/a	n/a	n/a

=> Limit violated

=> Selected Limit

2-29

WHC-SD-WM-DP-201, REV. 0

WHC-SD-WM-DP-201, REV. 1
HMF

HNF

WHC-SD-WM-DP-201, REV. 1

WHC-SD-WM-DP-201, REV. 0

CHAIN OF CUSTODY FORMS

HNF
WHC-SD-WM-DP-201, REV. 1

WHC-SD-WM-DP-201, REV. 0

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CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

Shipment Number N/A (2) Sample Number L1B BLWK (3) Supervisor M.C. Jones
 Tank B-109 (5) Riser 4 (6) Segment N/A (7) Core 170 (8) Cask Serial Number N/A

Radiation Survey Date: (9) FIELD		(33) LABORATORY	(10) Shipment Description
Over Top Dose Rate			A. Work Package Number <u>ES-96-00651</u>
Side Dose Rate			B. Cask Seal Number <u>11161</u>
Bottom Dose Rate			C. Sampler Serial Number <u>N/A</u>
Smearable Contamination			D. Date and Time Sampler Unseated <u>9-26-96 2100</u>
(Alpha)		(Alpha)	E. Expected Liquid Content <u>100%</u>
(Beta-Gamma)		(Beta-Gamma)	F. Expected Solid Content <u>0%</u>
RCT* (HPT)	(Signature)	RCT* (HPT)	G. Dose Rate Through Drill String <u>2.5 MR/hr</u>
		(Signature)	H. Expected Sample Length <u>100 mL</u>

INFORMATION (Include statement of laboratory tests to be performed.)					
Field Comments <u>L1B BLWK</u>			Laboratory Comments		
Point of Origin <u>B-109</u>	(14) Destination <u>222-S</u>	(15) Sender Name (Sign and PRINT) <u>James Sicks James Sicks</u>	(16) Date/Time <u>9-6-96</u>	(17) Sender Comments	
Relinquished By (Sign and PRINT) <u>James Sicks James Sicks</u>		(20) Received By (Sign and PRINT) <u>RL Chambers RL Chambers</u>	(21) Date/Time <u>9-6-96</u>	(22) Receiver Comments	
Relinquished By (Sign and PRINT) <u>James Sicks James Sicks</u>		(24) Received By (Sign and PRINT) <u>RL Chambers RL Chambers</u>	(25) Date/Time <u>9-6-96</u>	(26) Receiver Comments	
Relinquished By (Sign and PRINT)		(28) Received By (Sign and PRINT)	(29) Date/Time	(30) Receiver Comments	
(18) Seal Intact Upon Release? ☒ Yes ☐ No		(31) Seal Intact Upon Receipt? ☒ Yes ☐ No		(32) Seal Date Consistent with this Record? ☐ Yes ☒ No	
Shipment No. ☐ Yes ☒ No		Cask Seal No. ☐ Yes ☒ No		Sample No. ☒ Yes ☐ No	

005

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipments Number: 200W-08-7F
(2) Sample Number: FdLk BkLk.
(3) Separator: BkLk BkLk
(4) Tank: 0.19g
(5) Ratio: 4
(6) Segment: FdLk BkLk BkLk Co. 120
(7) Cook Serial Number: C-2014

[illegible]

(11) INFORMATION (Provide statement of laboratory tests to be performed.)

13a) Liberty Comments

[illegible]

BC-600C-309 (02/84)

Goldsmith - Tank Farm Operations, S4-43

Yellow - Section of Sample Pink - Core Sampling, 56-B5

DISTRIBUTION: White - Office of Sample Management

WHC-SD-WM-DP-201, REV. 1

WUC-SD-WM-DP-201, REV. C

COPY

33-152

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

COPY

(1) Shipment Number 200W-08-TF (2) Sample Number 96-495 (3) Supervisor Daniel O'Keefe
 (4) Tank B-109 (5) Riser 4 (6) Segment 2 (7) Core 170 (8) Cask Serial Number 71

Radiation Survey Date:		(9) FIELD	(10) LABORATORY	(11) Shipment Description
Over: Top Dose Rate	<u>20.5 mSv/hr</u>	<u>20.5 mSv/hr</u>		A. Work Package Number <u>ES-96-00651</u>
Side Dose Rate	<u>2.5 mSv/hr</u>	<u>2.7 mSv/hr</u>		B. Cask Seal Number <u>11112</u>
Bottom Dose Rate	<u>1 mSv/hr</u>	<u>1.6 mSv/hr</u>		C. Sampler Serial Number <u>96-021</u>
Sourceable Contamination	<u>170</u>	<u>180 cts</u>		D. Date and Time Sampler Unsealed <u>8/27/96, 0137 hrs</u>
	(Alpha)	(Alpha)		E. Expected Liquid Content <u>10%</u>
	<u>21K</u>	<u>21K</u>		F. Expected Solid Content <u>90%</u>
	(Beta-Gamma)	(Beta-Gamma)		G. Dose Rate Through Drill String <u>170 mSv/hr</u>
ACT: <u>[Signature]</u>	ACT: <u>[Signature]</u>			H. Expected Sample Length <u>19"</u>
(Signature)	(Signature)			

(11) INFORMATION (Include statement of laboratory tests to be performed.)

(12) Field Comments

Sample Clean.

(14) Laboratory Comments

(13) Point of Origin

B-109

(14) Destination

222-5 Lats.

(15) Sender Name (Sign and PRINT)

James Sicks

(16) Date/Time

9-6-96

(17) Sender Comments

(18) Relinquished By (Sign and PRINT)

James Sicks

(19) Received By (Sign and PRINT)

Daniel O'Keefe

(20) Date/Time

9-6-96

(21) Receiver Comments

(22) Relinquished By (Sign and PRINT)

Daniel O'Keefe

(23) Received By (Sign and PRINT)

Stephen J. Knight Jr.

(24) Date/Time

7-6-96

(25) Receiver Comments

(26) Relinquished By (Sign and PRINT)

Daniel O'Keefe

(27) Received By (Sign and PRINT)

Stephen J. Knight Jr.

(28) Date/Time

7-6-96

(29) Receiver Comments

(30) Seal Intact Upon Release?

☒ Yes☐ No

(31) Seal Intact Upon Receipt?

☒ Yes☐ No

(32) Seal Data Consistent with this Record?

Shipment No.

☒ Yes☐ No

Cask Seal No.

☒ Yes☐ No

Sample No.

☒ Yes☐ No

DISTRIBUTION: White - Office of Sample Management

Yellow - Recipient of Sample

Pink - Core Sampling, 55-85

Goldendred - Tank Farm Operations, 54-43

BC-6000-203 (2/7/94)

2-35

09/05/95

18:25

509 373 1432

2025

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

COPY

(1) Shipment Number 200 W-08 TF (2) Sample Number 96-496 (3) Supervisor David Dwyer
 (4) Tank B-109 (5) Riser 4 (6) Segment 3 (7) Core 170 (8) Cask Serial Number 1037

Radiation Survey Data:		(13) LABORATORY	(14) Shipment Description
Over Top Dose Rate	<u>10.5 mR/hr</u>	<u>10.5 mR/hr</u>	A. Work Package Number <u>F.S-96-00651</u>
Side Dose Rate	<u>10.5 mR/hr</u>	<u>10.5 mR/hr</u>	B. Cask Seal Number <u>11114</u>
Bottom Dose Rate	<u>10.5 mR/hr</u>	<u>10.5 mR/hr</u>	C. Sampler Serial Number <u>96-019</u>
Smearable Contamination:	<u>120</u>	<u>1180</u> <u>LT5</u>	D. Date and Time Sampler Unseated <u>8/22/96, 0428</u>
	(Alpha) <u><1K</u>	(Alpha) <u><1K</u> <u>245</u>	E. Expected Liquid Content <u>0.70</u>
	(Beta-Gamma) <u><1K</u>	(Beta-Gamma) <u>245</u>	F. Expected Solid Content <u>5.5</u>
RCF* <u>DL</u>	(Signature)	RCF* <u>DL</u>	G. Dose Rate Through Drill String <u>7.18</u>
(HPT)		(HPT)	H. Expected Sample Length <u>1K</u>

(11) INFORMATION (Include statement of laboratory tests to be performed.)

(12) Field Comments Last Segment started at 4
19" stroke HDD went off @ 17 1/2" only
pushed 1/2"

(13) Laboratory Comments

(11) Point of Origin <u>B-109</u>	(14) Destination <u>222.5 Lake</u>	(15) Sender Name (Sign and PRINT) <u>James S. Pickels</u>	(18) Date/Time <u>9-6-96</u>	(17) Sender Comments
(19) Relinquished By (Sign and PRINT) <u>James S. Pickels</u>	(20) Received By (Sign and PRINT) <u>James S. Pickels</u>	(21) Date/Time <u>9-6-96</u>	(22) Receiver Comments	
(23) Relinquished By (Sign and PRINT) <u>James S. Pickels</u>	(24) Received By (Sign and PRINT) <u>James S. Pickels</u>	(25) Date/Time <u>9-6-96</u>	(26) Receiver Comments	
(27) Relinquished By (Sign and PRINT) <u>James S. Pickels</u>	(28) Received By (Sign and PRINT) <u>James S. Pickels</u>	(29) Date/Time <u>9-6-96</u>	(30) Receiver Comments	

(32) Seal Data Consistent with the Record?

(18) Seal Intact Upon Release?	(31) Seal Intact Upon Receipt?	Shipment No.	Cask Seal No.	Sample No.
☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Core Sampling, 56-85 Goldendred - Tank Farm Operations, 54-43

6C-6000-303 (02/94)

HNF
WHC-SD-WM-DP-201, REV. 1

WHC-SD-WM-DP-201, REV. 0

COPY

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

(1) Shipment Number 200W-08 TF (2) Sample Number 96-491 (3) Supervisor Raymond Day
 (4) Tank B-109 (5) Sizer 7 (6) Segments 9 (7) Core 169 (8) Cask Serial Number 69

Radiation Survey Data:		(31) FIELD	(32) LABORATORY	(10) Shipment Description
Over Top Dose Rate	<u>20.5 us/hr</u>	<u>20.5 us/hr</u>	<u>20.5 us/hr</u>	A. Work Package Number <u>B-76-00652</u>
Side Dose Rate	<u>20.5 us/hr</u>	<u>20.5 us/hr</u>	<u>20.5 us/hr</u>	B. Cask Seal Number <u>11109</u>
Bottom Dose Rate	<u>20.5 us/hr</u>	<u>20.5 us/hr</u>	<u>20.5 us/hr</u>	C. Sampler Serial Number <u>95-0875</u>
Strontium Contamination	<u>220</u>	<u>2180</u>	<u>245</u>	D. Date and Time Sampler Unsealed <u>8/22/85, 7:00</u>
	(Alpha)	(Alpha)	(Alpha)	E. Expected Liquid Content <u>10%</u>
	<u>LK</u>	<u>LK</u>	<u>245</u>	F. Expected Solid Content <u>90%</u>
	(Beta-Gamma)	(Beta-Gamma)	(Beta-Gamma)	G. Dose Rate Through Drill String <u>12 mR</u>
RCF (HPC)	<u>London</u>	RCF (HPC)	<u>London</u>	H. Expected Sample Length <u>491"</u>
	(Signature)		(Signature)	

(11) INFORMATION (Include statement of laboratory tests to be performed.)

(12) Field Comments

Only a 5" streak

(14) Laboratory Comments

(13) Point of Origin <u>B-109</u>	(14) Destination <u>2225-CAL</u>	(15) Sender Name (Sign and PRINT) <u>James S. Nichols</u>	(16) Date/Time <u>8/30 9-6-76</u>	(17) Sender Comments
(19) Relinquished By (Sign and PRINT) <u>James S. Nichols</u>	(20) Received By (Sign and PRINT) <u>James S. Nichols</u>	(21) Date/Time <u>9-6-76</u>	(22) Receiver Comments	
(23) Relinquished By (Sign and PRINT) <u>James S. Nichols</u>	(24) Received By (Sign and PRINT) <u>James S. Nichols</u>	(25) Date/Time <u>9-6-76</u>	(26) Receiver Comments	
(27) Relinquished By (Sign and PRINT) <u>James S. Nichols</u>	(28) Received By (Sign and PRINT) <u>James S. Nichols</u>	(29) Date/Time <u>9-6-76</u>	(30) Receiver Comments	
(31) Seal Intact Upon Release? ☒ Yes ☐ No	(32) Seal Intact Upon Receipt? ☒ Yes ☐ No	(33) Seal Date Consistent with this Record?		
Shipment No. ☒ Yes ☐ No		Cask Seal No. ☒ Yes ☐ No		Sample No. ☒ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management Yellow - Recipient of Sample Pink - Core Sampling, SS-85 Goldenrod - Tank Farm Operations, 54-43

BC-6000-303 (02/74)

WHG-SD-WM-DP-201, REV. 1
HC-SD-WM-DP-201, REV. 1

09/05/95

10:24

222

2-37

COPY

CHAIN-OF-CUSTODY RECORD FOR CORE SAMPLING

1) Shipment Number 200W-08-TP (2) Sample Number 96-492 (3) Supervisor R. Frank Strait
 (4) Tank B-109 (5) Riser 7 (6) Segment 2 (7) Core 169 (8) Cask Serial Number 74

radiation Survey Data:

(9) FIELD

Over Top Dose Rate 10.5 mS/hrSide Dose Rate 2.5 mS/hrBottom Dose Rate 5 mS/hrSmearable Contamination 220<1K

(Alpha)

RCT*
(HPT)

(Signature)

(33) LABORATORY

<0.5 mS/hr2.5 mS/hr5 mS/hr220<1K

(Alpha)

RCT*
(HPT)

(Signature)

(10) Shipment Description

A. Work Package Number ES-96-00652B. Cask Seal Number 10330C. Sampler Serial Number 95-0575D. Date and Time Sampler Unseated 8-23-96 / 0226E. Expected Liquid Content 70%F. Expected Solid Content 30%G. Dose Rate Through Drill String 230 mS/hrH. Expected Sample Length 8 3/4

1) INFORMATION (Include statement of laboratory tests to be performed.)

2) Field Comments

sample clean
a problem with max. out @ 3000
downflow.

(34) Laboratory Comments

3) Point of Origin

B-109

(14) Destination

222's Lab.

(15) Sender Name (Sign and PRINT)

James Sickle

Relinquished By (Sign and PRINT)

James Sickle

(20) Received By (Sign and PRINT)

McDermott

Relinquished By (Sign and PRINT)

McDermott

(24) Received By (Sign and PRINT)

RL Chambers

Relinquished By (Sign and PRINT)

RL Chambers

(28) Received By (Sign and PRINT)

RL Chambers

(16) Date/Time

9-10-96

(17) Sender Comments

(21) Date/Time

9-10-96

(22) Receiver Comments

(25) Date/Time

9-14-96

(26) Receiver Comments

(29) Date/Time

(30) Receiver Comments

18) Seal Intact Upon Release?

☒ Yes ☐ No

(31) Seal Intact Upon Receipt?

☒ Yes ☐ No

(32) Seal Data Consistent with this Record?

Shipment No.

☒ Yes ☐ No

Cask Seal No.

☒ Yes ☐ No

Sample No.

☒ Yes ☐ No

DISTRIBUTION: White - Office of Sample Management

Yellow - Recipient of Sample

Pink - Core Sampling, S6-85

Goldenrod - Tank Farm Operations, S4-43

BC-5000-309 107M41

WHG-SD-WM-DP-201, REV. 1

10-SD-WM-DP-201, REV. 0

002

509 373 1432

13:51

09/10/96

38

HNF
WHC-SD-WM-DP-201, REV. 1

WHC-SD-WM-DP-201, REV. 0

INORGANIC ANALYSES

HNF

WHC-SD-WM-DP-201, REV. 1

WHC-SD-WM-DP-201, REV. 0

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LABCORE Completed Worklist Report for Worklist# 13507

Analyst: tam

Instrument: DSC0

Book# 12N14-B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: B-109 DSC, RUN UNDER N2. RCJ

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		DSC-01	SOLID	28.45	26.5*	93.146 % Recovery	
2	SAMPLE	S96T005112	0		DSC-01	SOLID	N/A	90.9		Joules/g
3	DUP	S96T005112	0		DSC-01	SOLID	90.9	89.6	1.440	RPD
4	SAMPLE	S96T005124	0		DSC-01	SOLID	N/A	0		Joules/g
5	DUP	S96T005124	0		DSC-01	SOLID	0	0	0.000	RPD

Final page for worklist# 13507

See attached for signatures 10-10-96
Analyst Signature _____ Date _____

Analyst Signature _____ Date _____

Blandina Valenzuela 10-10-96
Reviewer Signature _____ Date _____

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES B-47 TO 47.

Murphy 10-8-96

DSC STD 12N14-B N2

34.640 mg

Rate: 10.0 °C/min

File: 00055.001

DSC METTLER 07-Oct-96

Ident: 0.0 222-S Laboratory

34-43

S96T005112 N2

11.031 mg

Rate: 10.0 °C/min

File: 00069.001

DSC METTLER

08-Oct-96

Ident: 0.0

222-S Laboratory

WHC-SD-WM-DP-201, REV.0

WHC-SD-WM-DP-201, REV.1

S96T005112 DUP N2
 19.800 mg
 Rate: 10.0 °C/min
 File: 00071.001
 Ident: 0.0
 DSC METTLER
 222-S Laboratory
 08-Oct-96

WHC-SD-WM-DP-201, REV. 1
 HNF

WHC-SD-WM-DP-201, REV. 0

S96T005124 DUP N2

21.267 mg

Rate: 10.0 °C/min

File: 00067.001

DSC METTLER

08-Oct-96

Ident: 0.0

222-S Laboratory

WHC-SD-WM-DP-201, REV.0

WHC-SD-WM-DP-201, REV.1
HNF

LABCORE Data Entry Template for Worklist# 13809

Analyst:

ABC

Instrument: DSC0

1

Book # 12W.4B

Method: LA-514-113 Rev/Mod

C-1

Worklist Comment: B-109 DSC, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	LIQUID	28.45	27.7*	N/A	Joules/g
96001238	B-109	2 SAMPLE	S96T005116	0	DSC-01	LIQUID	N/A	Ø		Joules/g
96001238	B-109	3 DUP	S96T005116	0	DSC-01	LIQUID	Ø	Ø	N/A	Joules/g

Final page for worklist # 13809

Analyst Signature

Date

Analyst Signature

Date

Verified/Validated by
Blancina

Valenzuela 10-22-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 49 TO 51.

DSC STD 12N14B

17.838 mg

Rate: 10.0 °C/min

File: 00042.001

Ident: 0.0

DSC METTLER

14-Oct-96

222-S Laboratory

exo

Integration

Delta H 494 mJ

27.7 J/g

Peak 158.8 °C

-29.5 mW

10. mW

2-49

WFO-SD-WM-DP-201, REV. 1

WFO-SD-WM-DP-201, REV. 0

Blandina Valenzuela for KR Querin

10-30-96

120.

130.

140.

150.

160.

170.

°C

File: 00047.001 DSC METTLER 15-Oct-96

Ident: 0.0 222-S Laboratory

S96T005116 N2

9.874 mg

Rate: 10.0 °C/min

exo

Integration
Delta H11910 mJ
1206.2 J/g
Peak 101.3°C
-83.3 mW

50. mW

°C

400.

300.

200.

100.

S96T005J16 DUP N2
10.401 mg

Rate: 10.0 °C/min

File: 00048.001 DSC METTLER 15-Oct-95
Ident: 0.0 222-3 Laboratory

Integration
Delta H18331 mJ
1762.4 J/g
Peak 95.3°C
-84.1 mW

LABCORE Data Entry Template for Worklist# 13875

Analyst: Jds Instrument: DSC0 1 Book # 12N14B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: B-109. Run under nitrogen.Std: INDIUM ~8mg.new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	SOLID	<u>28.45</u>	<u>25.2</u>	<u>N/A</u>	Joules/g
96001237	B-109	2 SAMPLE	S96T005102 0		DSC-01	SOLID	<u>N/A</u>	<u>49.4</u>		Joules/g
96001237	B-109	3 DUP	S96T005102 0		DSC-01	SOLID	<u>49.4</u>	<u>46.0</u>	<u>N/A</u>	Joules/g
96001237	B-109	4 SAMPLE	S96T005108 0		DSC-01	SOLID	<u>N/A</u>	<u>Ø</u>		Joules/g
96001237	B-109	5 DUP	S96T005108 0		DSC-01	SOLID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g

Final page for worklist # 13875

Jds 10-18-96
Analyst Signature Date

Frank Male 10-18-96
Analyst Signature Date

Verified/Validated by
Blandina
Valenzuela 10-22-96

Data Entry Comments: S96T005102 exotherms is a small release of heat over
a long time.

S96T005108 displayed a drop in baseline @ approximately 440°C this could be
due to a change in heat capacity.

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 53 TO 57.

DSC STD 12N14B N2

17.830 mg

Rate: 10.0 °C/min

File: 00069.001

DSC METTLER

17-Oct-96

Ident: 0.0

222-S Laboratory

exo

Integration

Delta H 450 mJ

25.2 J/g

Peak 158.6°C

-26.1 mW

10. mW

2-53

WHC-SD-WM-DP-201, REV. 1

WHC-SD-WM-DP-201, REV. 0

120.

130.

140.

150.

160.

170.

°C

10-18-96

S96T005102 N2

34.950 mg

Rate: 10.0 °C/min

File: 00071.001 DSC METTLER 17-Oct-96
Ident: 0.0 222-S Laboratory

S96T005102 DUP N2

16.480 mg

Rate: 10.0 °C/min

File: 00073.001 DSC METTLER 17-Oct-96

Ident: 0.0

222-S Laboratory

HNE
WM-SD-WM-DP-201, REV. 1

WM-SD-WM-DP-201, REV. 0

S96T005108 N2

13.001 mg

Rate: 10.0 °C/min

File: 00075.001 DSC METTLER 17-Oct-96

Ident: 0.0 222-S Laboratory

S96T005108 DUP N2

34.520 mg

Rate: 10.0 °C/min

File: 00077.001 DSC METTLER 18-Oct-96

Ident: 0.0 222-S Laboratory

<exo

50. mW

2-57

100. 200. 300. 400. °C

WHC-SD-WM-DP-201, REV. 1

LABCORE Data Entry Template for Worklist# 13877

Analyst: RDM Instrument: DSC0 3 Book # 12N4B

Method: LA-514-114 Rev/Mod D-O

Worklist Comment: B-109. Run under nitrogen. Std: INDIUM ~8mg. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-03	SOLID	<u>28.45</u>	<u>28.59</u>	<u>N/A</u>	Joules/g
96001238	B-109	2 SAMPLE	S96T005132	0	DSC-03	SOLID	<u>N/A</u>	<u>Ø</u>		Joules/g
96001238	B-109	3 DUP	S96T005132	0	DSC-03	SOLID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g
96001238	B-109	4 SAMPLE	S96T005135	0	DSC-03	SOLID	<u>N/A</u>	<u>Ø</u>		Joules/g
96001238	B-109	5 DUP	S96T005135	0	DSC-03	SOLID	<u>Ø</u>	<u>Ø</u>	<u>N/A</u>	Joules/g

Final page for worklist # 13877

See attached for signatures
Analyst Signature Date 10-18-96

Frank Mink 10-18-96
Analyst Signature Date

Verified/Validated by

Blandina
Valenzuela 10-22-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Data Entry Template for Worklist# 13877

Analyst: Rm

Instrument: DSC0

Book # 12N14B

Method: LA-514-113 Rev/Mod D-0

Worklist Comment: B-109. Run under nitrogen. Std: INDIUM ~8mg. new

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID			N/A	Joules/g
96001238	B-109	2	SAMPLE	S96T005132	0		DSC-01	SOLID	N/A			Joules/g
96001238	B-109	3	DUP	S96T005132	0		DSC-01	SOLID			N/A	Joules/g
96001238	B-109	4	SAMPLE	S96T005135	0		DSC-01	SOLID	N/A			Joules/g
96001238	B-109	5	DUP	S96T005135	0		DSC-01	SOLID			N/A	Joules/g

Final page for worklist # 13877

Rm 10/16/96
Analyst Signature Date

Analyst Signature Date

TGA-03 instrument
was used.
10-18-96

Blandina
Valencia

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: DSC

File info: IND101501 Tue Oct 15 17:46:15 1996

Sample Weight: 22.750 mg

12N14-B INDIUM AT 10C/MIN

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 60 TO 64.

N2, EXOTHERM DOWN

TEMP: 140.0 °C TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Oct 15 18:35:35 1996

WME-SD-WM-DP-201, REV. 1

WME-SD-WM-DP-201, REV. 0

Curve 1: DSC

File info: SAM101505 Tue Oct 15 19:37:05 1996

Sample Weight: 34.570 mg

S96T005132

N2 10C/min

TEMP1: 35.0 °C TIME1: 0.0 min RATE1: 10.0 °C/min

TEMP2: 500.0 °C

Temperature (°C)

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Oct 15 21:06:48 1996

WME-SD-WM-DP-201, REV. 0
WME-SD-WM-DP-201, REV. 1

Curve 1: DSC

File Info: SAM101506 Tue Oct 15 22:09:11 1996

Sample Weight: 58.140 mg

S96T005132DUP

N2 10C/min

TEMP: 35.0 °C
START: 500.0 °C

TIME: 0.0 min RATE: 10.0 C/min

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Tue Oct 15 23:55:16 1996

Curve 1: DSC

File info: SAM101601 Wed Oct 16 00:47:30 1996

Sample Weight: 85.480 mg

S96T005135

N2 10C/min
TEMP1: 35.0 °C
TEMP2: 500.0 °C

TIME1: 0.0 min RATE1: 10.0 °C/min

Temperature (°C)

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Oct 16 00:57:33 1996

WMO-SD-WM-DP-201, REV.0
WME-SD-WM-DP-201, REV.1

Curve 1: DSC

File info: SAM101602 Wed Oct 16 01:49:26 1996

Sample Weight: 41.730 mg

S96T005135DUP

N2 10C/min

TEMP: 35.0 °C
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

RD MEYERS
PERKIN-ELMER
7 Series Thermal Analysis System
Wed Oct 16 02:36:29 1996

WHS-SD-WM-DP-201, REV. 0
WHS-SD-WM-DP-201, REV. 1

LABCORE Data Entry Template for Worklist# 13878

Analyst: RM Instrument: DSC0 1 Book # 12N14B

Method: LA-514-113 Rev/Mod C-1

Worklist Comment: B-109: Run under nitrogen. Std: INDIUM ~8mg. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			DSC-01	SOLID	28.45	28.8*	N/A	Joules/g
96001238	B-109	2 SAMPLE	S96T005136	0	DSC-01	SOLID	N/A	Ø		Joules/g
96001238	B-109	3 DUP	S96T005136	0	DSC-01	SOLID	Ø	Ø	N/A	Joules/g

Final page for worklist # 13878

Analyst Signature RM Date 10/16/96

Analyst Signature John Mack Date 10-18-96

Verified/Validated by
Blandina
Valenzuela 10-22-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 66 TO 70 ^{LAD} ₆₈ ^{10/30/96}

DSC STD 12N14B

17.838 mg

Rate: 10.0 °C/min

File: 00050.001

Ident: 0.0

DSC METTLER
222-S Laboratory

15-Oct-96

exo>

Integration

Delta H 514 mJ

28.8 J/g

Peak 158.3 °C

-31.3 mW

10. mW

99-2

HNF
WHC-SD-WM-DP-201, REV 1

WHC-SD-WM-DP-201, REV 1

Blandina Valenzuela

10-30-96

120.

130.

140.

150.

160.

170.

°C

S96T005136 N2
63.380 mg

File: 00059.001 DSC METTLER 15-Oct-96
Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

<exo>

WM-SD-WM-DP-201, REV. 1

S96T005136 DUP N2 File: 00061.001 DSC METTLER 15-Oct-96
39.840 mg Rate: 10.0 °C/min Ident: 0.0 222-S Laboratory

HNF
WIC-SD-WM-DP-201, REV. 1

LABCORE Data Entry Template for Worklist# 14285

Analyst: BDV Instrument: DSC01 Book #

Method: LA-514-113 Rev/Mod

Worklist Comment: Dry DSC for B-109. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-----TEST-----	MATRIX	ACTUAL	FOUND	DL	UNIT
96001238	B-109	1 SAMPLE	S96T005116	0	DSC-02	LIQUID	N/A	Ø		Joules/g Dry
96001238	B-109	2 DUP	S96T005116	0	DSC-02	LIQUID	Ø	Ø	N/A	Joules/g Dry
96001237	B-109	3 SAMPLE	S96T005102	0	DSC-02	SOLID	N/A	89.2		Joules/g Dry
96001237	B-109	4 DUP	S96T005102	0	DSC-02	SOLID	89.2	83.1	N/A	Joules/g Dry
96001237	B-109	5 SAMPLE	S96T005112	0	DSC-02	SOLID	N/A	110		Joules/g Dry
96001237	B-109	6 DUP	S96T005112	0	DSC-02	SOLID	110	109	N/A	Joules/g Dry
96001238	B-109	7 SAMPLE	S96T005124	0	DSC-02	SOLID	N/A	Ø		Joules/g Dry
96001238	B-109	8 DUP	S96T005124	0	DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96001238	B-109	9 SAMPLE	S96T005132	0	DSC-02	SOLID	N/A	Ø		Joules/g Dry
96001238	B-109	10 DUP	S96T005132	0	DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96001238	B-109	11 SAMPLE	S96T005135	0	DSC-02	SOLID	N/A	Ø		Joules/g Dry
96001238	B-109	12 DUP	S96T005135	0	DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry
96001238	B-109	13 SAMPLE	S96T005136	0	DSC-02	SOLID	N/A	Ø		Joules/g Dry
96001238	B-109	14 DUP	S96T005136	0	DSC-02	SOLID	Ø	Ø	N/A	Joules/g Dry

Final page for worklist # 14285

Blandina Valenzuela
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

WFG SD-WM-DP-201, REV. 1

LABCORE Completed Worklist Report for Worklist# 14327

Analyst: bdv

Instrument: DSC01

Book# _____

Method: _____ Rev/Mod _____

Worklist Comment: Dry DSC for B-109. bdv

Seq	Type	Sample#	R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	SAMPLE	S96T005108	0	DSC-02	SOLID	N/A	0		Joules/g Dry
2	DUP	S96T005108	0	DSC-02	SOLID	0	0	0.000 RPD	
3	SAMPLE	S96T005119	0	DSC-02	SOLID	N/A	0		Joules/g Dry
4	DUP	S96T005119	0	DSC-02	SOLID	0	0	0.000 RPD	
5	SAMPLE	S96T005131	0	DSC-02	SOLID	N/A	0		Joules/g Dry
6	DUP	S96T005131	0	DSC-02	SOLID	0	0	0.000 RPD	

Final page for worklist# 14327

Blandina Valenzuela 10-24-96
Analyst Signature Date

Analyst Signature Date

Blandina Valenzuela 10-24-96
Reviewer Signature Date

10/01/96 09:33

LABCORE Data Entry Template for Worklist# 13506

Analyst: QJM Instrument: TGA01 1 Book # 8208-AMethod: LA-560-112 Rev/Mod B-1 C-0

Worklist Comment: B-109 TGA, RUN UNDER N2. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	59.2	59.67	N/A	%
96001237	B-109	2 SAMPLE	S96T005112	0	TGA-01	SOLID	N/A	26.29	N/A	%
96001237	B-109	3 DUP	S96T005112	0	TGA-01	SOLID	26.29	20.96	N/A	%
96001238	B-109	4 SAMPLE	S96T005124	0	TGA-01	SOLID	N/A	25.76	N/A	%
96001238	B-109	5 DUP	S96T005124	0	TGA-01	SOLID	25.76	22.68	N/A	%

Final page for worklist # 13506

QJM 10-8-96
 Analyst Signature Date

Susan Ben 10/09/96
 Analyst Signature Date

Verified/Validated by
Blandina
Valenzuela
10-10-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
 R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT,
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 12 TO 14.

Murphy 10-8-96

TGA STD 82N8--A N2
19.399 mg

Rate: 10.0 °C/min

File: 00056.001

Ident: 0.0

TG METTLER

07-Oct-96

222-S Laboratory

WHC-SD-WM-DP-201, REV. 1

HNE
WHC-SD-WM-DP-201, REV. 1

Step Analysis
Height-11.58 mg
-59.67 %
Resid. 7.82 mg
40.33 %
Dpeak 79.2 °C

5. mg

2-72

50.

100.

150.

200.

°C

S96T005112 N2

11.195 mg

Rate: 10.0 °C/min

File: 00070.001 TG METTLER 08-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis
Height -1.60 mg
-14.27 %
ResidC. 9.60 mg
85.73 %
Dpeak 69.0 °C

Step Analysis
Height -1.97 mg
-17.58 %
ResidC. 7.63 mg
68.15 %
Dpeak 281.0 °C

ANF
MHG-SD-WM-DP-201, REV. 1

MMG-SD-WM-DP-201, REV. 1

S96T005112 DUP N2

27.434 mg

Rate: 10.0 °C/min

File: 00072.001 TG METTLER 08-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -5.75 mg

-20.96 %

ResiC. 21.68 mg

79.04 %

Dpeak 95.0 °C

Step Analysis

Height -4.39 mg

-16.01 %

ResiC. 17.29 mg

63.03 %

Dpeak 291.0 °C

S96T005124 N2

48.078 mg

Rate: 10.0 °C/min

File: 00066.001

TG

METTLER

08-Oct-96

Ident: 0.0

222-S Laboratory

HN
HC-SD-WM-DP-201, REV. 1

WM-SD-WM-DP-201, REV. 1

File: 00068,001 TG METTLER 08-Oct-96

Rate: 10.0 °C/min

File: 00058.001

TG METTLER

Ident: 0.0

222-S Laboratory

Step Analysis

Height -8.33 mg

-22.68 %

Resic. 28.40 mg

77.30 %

Dpeak 127.0°C

2-76

WHC-SD-WM-DP-201, REV. 0

LABCORE Completed Worklist Report for Worklist# 13808

Analyst: krq

Instrument: TGA01

Book# 82NEAMethod: LA-560-112 Rev/Mod C-0

Worklist Comment: B-109 TGA, RUN UNDER N2. RCJ

Seq Type	Sample# R A	Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD	0	TGA-01	LIQUID	59.2	59.16*	99.932 % Recovery	
2 SAMPLE	S96T005116 0	TGA-01	LIQUID	N/A	102	%	
3 DUP	S96T005116 0	TGA-01	LIQUID	102	100	1.980 RPD	

Comments Section:

Comments for sample# S96T005116 and test TGA-01 .
HIGHER %WATER IS DUE TO SMALL VARIATIONS IN the weighing of
the sample.

Final page for worklist# 13808

See attached for signatures 10-22-96

Analyst Signature

Date

Analyst Signature

Date

Blondina Valenzuela
Reviewer Signature10-23-96
Date

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 78 TO 80.

TGA STD 82N8A

21.563 mg

Rate: 10.0 °C/min

File: 00035.001

TG

METTLER

14-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-12.76 mg

-59.16 %

ResidC. 8.81 mg

40.84 %

Dpeak 94.2 °C

2-78

5. mg

WMC-SD-WM-DP-201, REV. 1

S96T005116 N2

9.657 mg

Rate: 10.0 °C/min

File: 00045.001

TG

METTLE

15-Oct-95

Ident: 0.0

222-S Laboratory

Step Analysis

Height -9.68 mg

-100.23 %

ResidC. -0.02 mg

-0.23 %

5. mg
2-79

100.

200.

300.

400.

°C

WHC-SD-WM-DP-201, REV. 0
WHC-SD-WM-DP-201, REV. 1

S96T005116 N2
9.957 mg

File: 00044.001 TG METTLER 14-Oct-96
Ident: 0.0 222-S Laboratory

Rate: 10.0 °C/min

Step Analysis
Height-10.17 mg
-102.11 %
ResiC. -0.21 mg
-2.11 %

HNF
WHG-SD-WM-DP-201, REV. 1

5. mg 2-80

LABCORE Completed Worklist Report for Worklist# 13879

Analyst: jds

Instrument: TGA01

Book# 82NEA

Method: LA-560-112 Rev/Mod C-D

Worklist Comment: B-109. Run under nitrogen. Std:TERLIQ 0.10ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		TGA-01	SOLID	59.2	58.5	98.818 % Recovery	
2	SAMPLE	S96T005102	0		TGA-01	SOLID	N/A	44.45		%
3	DUP	S96T005102	0		TGA-01	SOLID	44.45	44.79	0.762 RPD	
4	SAMPLE	S96T005108	0		TGA-01	SOLID	N/A	65.41		%
5	DUP	S96T005108	0		TGA-01	SOLID	65.41	43.79	39.597 RPD	

Comments Section:

Comments for sample# S96T005108 and test TGA-01
S96T005108 SAMPLE HAS HIGH RPD'S AND SHOULD BE RERUN. THE
SHAPE OF THE THERMOGRAM IS VERY SIMILAR.

Final page for worklist# 13879

Blandina Valenzuela for JD Spellman 10-22-96
Analyst Signature Date

Analyst Signature Date

Blandina Valenzuela 10-22-96
Reviewer Signature Date

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 82 TO 84.

TGA STD 82N8A N2

19.192 mg

Rate: 10.0 °C/min

File: 00070.001

Ident: 0.0

TG METTLER 17-Oct-96

222-S Laboratory

Step Analysis
Height-11.23 mg
-58.50 %
ResidC. 7.96 mg
41.49 %
Dpeak 87.5 °C

28-2

5. mg

HNF
MHC-SD-WM-DP-201, REV. 1

Signature
10-18-96

S96T005102 N2

24.236 mg

Rate: 10.0 °C/min

File: 00072.001 TG METTLER 17-Oct-96
Ident: 0.0 222-S Laboratory

Step Analysis
Height-10.77 mg
-44.45 %
Resid. 13.44 mg
55.45 %
Dpeak 107.0 °C

Step Analysis
Height -1.29 mg
-5.31 %
Resid. 12.12 mg
50.02 %
Dpeak 271.0 °C

5. mg

100. 200. 300. 400. °C

S96T005102 DUP N2

24.471 mg

Rate: 10.0 °C/min

File: 00074.001

TG

METTLER

17-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-10.96 mg

-44.79 %

ResiC. 13.48 mg

55.09 %

Dpeak 105.0°C

Step Analysis

Height -1.11 mg

-4.55 %

ResiC. 12.35 mg

50.48 %

Dpeak 279.0°C

2-84

5. mg

100.

200.

300.

400.

°C

WAC-SD-WM-DP-201, REV. 1

HNE

LABCORE Data Entry Template for Worklist# 13880

Analyst: KRM Instrument: TGA0 1 Book # 02N8A

Method: LA-560-112 Rev/Mod C-0

Worklist Comment: B-109. Run under nitrogen. Std: TERLIQ .010ml. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	<u>59.2</u>	<u>59.23</u>	<u>N/A</u>	%
96001238	B-109	2 SAMPLE	S96T005119	0	TGA-01	SOLID	<u>N/A</u>	<u>40.79</u>		%
96001238	B-109	3 DUP	S96T005119	0	TGA-01	SOLID	<u>40.79</u>	<u>39.11</u>	<u>N/A</u>	%
96001238	B-109	4 SAMPLE	S96T005131	0	TGA-01	SOLID	<u>N/A</u>	<u>44.85</u>		%
96001238	B-109	5 DUP	S96T005131	0	TGA-01	SOLID	<u>44.85</u>	<u>44.25</u>	<u>N/A</u>	%

Final page for worklist # 13880

Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number,
R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 86 TO 90.

TGA STD 82N8A N2

17.019 mg

Rate: 10.0 °C/min

File: 00013.001

TG

METTLER

19-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-10.08 mg

-59.23 %

ResidC. 6.93 mg

40.70 %

Dpeak 90.0 °C

WME-SD-WM-DP-201, REV. 1

[Signature]

S96T005119 N2

55.842 mg

Rate: 10.0 °C/min

File: 00015.001

TG

METTLER

19-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-22.78 mg

-40.79 %

ResidC. 33.03 mg

59.15 %

Dpeak 155.0 °C

Step Analysis

Height -3.61 mg

-6.46 %

ResidC. 29.42 mg

52.69 %

Dpeak 289.0 °C

2-87

10.1

WHS-SD-WM-DP-201, REV. 1

S96T005119 DUP N2

24.467 mg

Rate: 10.0 °C/min

File: 00016.001 TG METTLER 19-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -9.57 mg

-39.11 %

ResiC. 15.18 mg

62.04 %

Dpeak 45.0 °C

Step Analysis

Height -1.89 mg

-7.73 %

ResiC. 13.29 mg

54.31 %

Dpeak 285.0 °C

WAF-SD-WM-DP-201, REV. 1

S96T005131 N2

37.279 mg

Rate: 10.0 °C/min

File: 00017.001 TG METTLER 19-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis
Height-16.72 mg
-44.85 %
ResidC. 20.53 mg
55.07 %
Dpeak 149.0 °C

Step Analysis
Height -0.88 mg
-2.37 %
ResidC. 19.64 mg
52.70 %
Dpeak 277.0 °C

2-89

WHS-SD-WM-DP-201, REV. 1

S96T005131 DUP N2

43.769 mg

Rate: 10.0 °C/min

File: 00018.001

TG

METTLER

19-Oct-86

Ident: 0.0

222-S Laboratory

Step Analysis

Height-19.37 mg

-44.25 %

ResidC. 24.35 mg

55.62 %

Dpeak 159.0 °C

Step Analysis

Height -1.20 mg

-2.74 %

ResidC. 23.15 mg

52.89 %

WAC SD-WM-DP-201, REV. 1

2-90

LABCORE Data Entry Template for Worklist# 13881

Analyst: JDS Instrument: TGA0 3 Book # 82N8A

Method: LA-514-114 Rev/Mod DO

Worklist Comment: B-109. Run under nitrogen. Std: TERLIQ .010ml. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-03	SOLID	<u>59.2</u>	<u>58.54</u>	N/A	%
96001238	B-109	2 SAMPLE	S96T005132	0	TGA-03	SOLID	<u>N/A</u>	<u>43.63</u>		%
96001238	B-109	3 DUP	S96T005132	0	TGA-03	SOLID	<u>43.63</u>	<u>47.35</u>	N/A	%
96001238	B-109	4 SAMPLE	S96T005135	0	TGA-03	SOLID	<u>N/A</u>	<u>47.64</u>		%
96001238	B-109	5 DUP	S96T005135	0	TGA-03	SOLID	<u>47.64</u>	<u>41.66</u>	N/A	%

Final page for worklist # 13881

Analyst Signature

Date

Analyst Signature

Date

See attached for signatures
10-18-96
BDR
Verified/Validated by
Blandina
Valenzuela 10-23-96

Data Entry Comments:

S96T005132 results are the sum of two weight loss
step.

LABCORE Data Entry Template for Worklist# 13881

Analyst: Jds Instrument: TGA0 Book # 82N8A

Method: LA-560-112 Rev/Mod _____

Worklist Comment: B-109. Run under nitrogen. Std: TERLIQ .010ml. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	_____	_____	N/A	%
96001238	B-109	2 SAMPLE	S96T005132	0	TGA-01	SOLID	N/A	_____	_____	%
96001238	B-109	3 DUP	S96T005132	0	TGA-01	SOLID	_____	_____	N/A	%
96001238	B-109	4 SAMPLE	S96T005135	0	TGA-01	SOLID	N/A	_____	_____	%
96001238	B-109	5 DUP	S96T005135	0	TGA-01	SOLID	_____	_____	N/A	%

Final page for worklist # 13881

Jds 10-18-96
Analyst Signature Date

Analyst Signature Date

TGA-03 instrument
was used.

10-18-96

Blandina
Valenzuela

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Curve 1: TGA

File info: TER101701 Thu Oct 17 17:47:51 1996

Sample Weight: 21.219 mg

TGA STD 82N8-A

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 93 TO 97.

N2 10C/MIN
TEMP: 35.0 °C
TEMP: 300.0 °C

TIME: 0.0 min RATE: 10.0 °C/min

Temperature (°C)

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Thu Oct 17 17:48:45 1996

WAG-SD-WM-DP-201, REV. 1
HNE

Curve 1: TGA

File info: SAM101701 Thu Oct 17 18:48:37 1996

Sample Weight: 23.025 mg

S96T004757 5132

10-18-96
88V

10C/MIN N2

TEMP: 35.0 C TIME: 0.0 min RATE: 10.0 C/min

TEMP: 500.0 C

Temperature (°C)

JD SPELLMAN

PERKIN-ELMER

7 Series Thermal Analysis System

Fri Oct 18 10:20:19 1996

WHS-SD-MM-DP-201, REV. 1

Curve 1: TGA

File info: SAM101702 Thu Oct 17 20:07:00 1996

Sample Weight: 28.059 mg

S96T004757 5133 DUP

10-18-96 BDT

2-95

10C/MIN N2

TEMP: 30.0 C TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

JD SPELLMAN
PERKIN-ELMER

7 Series Thermal Analysis System
Fri Oct 18 11:25:00 1996

WASH-SD-WM-DP-201, REV. 1

Curve 1: TGA

File Info: SAM101703 Thu Oct 17 21:27:50 1996

Sample Weight: 25.919 mg

S96T005135

96-2

10C/MIN N2

TEMP: 35.0 °C
TEMP: 500.0 °C

TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

JD SPELLMAN
PERKIN-ELMER
7 Series Thermal Analysis System
Fri Oct 18 11:32:45 1996

FILE: SD-WM-DP-201, REV. 1

Curve 1: TGA
 File info: SAM101704 Fri Oct 18 01:30:41 1996
 Sample Weight: 24.837 mg
 S96T005135DUP

10C/MIN N2
 TEMPERATURE: 35.0 C
 TIME: 0.0 min RATE: 10.0 C/min

Temperature (°C)

JD SPELLMAN
 PERKIN-ELMER
 7 Series Thermal Analysis System
 Fri Oct 18 04:32:43 1996

WHC-SD-WM-DP-201, REV. 0
 HNE
 WHC-SD-WM-DP-201, REV. 1

LABCORE Data Entry Template for Worklist# 13882

Analyst: RDM Instrument: TGA0 1 Book # 92NBA

Method: LA-560-112 Rev/Mod C-0

Worklist Comment: B-109. Run under nitrogen. Std: TERLIQ .010ml. new

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	<u>59.2</u>	<u>59.32</u>	<u>N/A</u>	%
96001238	B-109	2 SAMPLE	S96T005136 0		TGA-01	SOLID	<u>N/A</u>	<u>23.81</u>		%
96001238	B-109	3 DUP	S96T005136 0		TGA-01	SOLID	<u>23.81</u>	<u>28.44</u>	<u>N/A</u>	%

Final page for worklist # 13882

RDM 10/14/96
Analyst Signature Date

Franklin Mark 10-18-96
Analyst Signature Date

Verified/Validated by
Blandina
Valenzuela 10-22-96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 99 TO 101.

TGA STD 82N8-A N2

15.001 mg

Rate: 10.0 °C/min

File: 00058.001

TG

METTLER

15-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -8.90 mg

-59.32 %

ResidC. 6.10 mg

40.68 %

Dpeak 86.7 °C

66-2

5. mg

WMC-SD-WM-DP-201, REV. 1

Blandina Valenzuela for RD Meyers

10-30-96

50.

100.

150.

200.

°C

15.491 mg

Rate: 10.0 °C/min

Ident: 0.0

222-S Laboratory

Height -1.12 mg

-7.22 %

ResiC. 14.37 mg

92.78 %

Height -2.57 mg

-16.59 %

ResiC. 11.79 mg

76.10 %

Dpeak 133.0 °C

142-
WHG-SD-WM-DP-201, REV. 1

S96T005136 DUP N2

43.938 mg

Rate: 10.0 °C/min

File: 00062.001 TG METTLER 15-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height -1.60 mg

-3.63 %

ResiC. 42.34 mg

96.37 %

Step Analysis

Height-10.90 mg

-24.81 %

ResiC. 31.40 mg

71.46 %

Dpeak 151.0 °C

2-101

5. mg

HN
WH-SD-WM-DP-201, REV. 1

LABCORE Data Entry Template for Worklist# 14282

Analyst: SJS Instrument: TGA0 1 Book # 82N84

Method: LA-560-112 Rev/Mod C-0

Worklist Comment: Please run B-109 TGA under N2. rerun. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD			TGA-01	SOLID	<u>59.2</u>	<u>58.99</u>	<u>N/A</u>	%
96001237	B-109	2 SAMPLE	S96T005108	1	TGA-01	SOLID	<u>N/A</u>	<u>44.81</u>		%
96001237	B-109	3 DUP	S96T005108	1	TGA-01	SOLID	<u>44.81</u>	<u>46.80</u>	<u>N/A</u>	%

Final page for worklist # 14282

SJS SJS 10.23.96
Analyst Signature Date

Analyst Signature Date

Data Entry Comments:

Analysis is a rerun

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT
COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 103 TO 105

TGA STD 82N8A N2

File: 00023.001

TG

METTLER

23-Oct-96

28.624 mg

Rate: 10.0 °C/min

Ident: 0.0

222-S Laboratory

Step Analysis

Height-16.88 mg

-58.99 %

Resid. 11.73 mg

40.99 %

Dpeak 102.5 °C

HAUT
WHC-SD-WM-DP-201, REV. 1

2-103

S96T005108 N2

29.892 mg

Rate: 10.0 °C/min

File: 00024.001

TG

METTTLER

23-Oct-96

Ident: 0.0

222-S Laboratory

Step Analysis

Height-13.39 mg

-44.81 %

Resid. 16.47 mg

55.10 %

Dpeak 85.0 °C

Step Analysis

Height -1.86 mg

-6.22 %

Resid. 14.62 mg

48.91 %

Dpeak 269.0 °C

WME
H&S-SD-WM-DP-201, REV. 1

2-104

S96T005108 DUP N2

23.057 mg

Rate: 10.0 °C/min

File: 00025.001

Ident: 0.0

TG METTLER 23-Oct-86

222-S Laboratory

Step Analysis

Height-10.79 mg

-46.80 %

ResidC. 12.24 mg

53.10 %

Dpeak 81.0 °C

Step Analysis

Height -0.98 mg

-4.25 %

ResidC. 11.21 mg

48.63 %

Dpeak 257.0 °C

HNC
WHG-SD-WM-DP-201, REV. 1

2-105

DISTRIBUTION SHEET

To Distribution	From Production Planning & Control	Page 1 of 1
		Date: 01/10/97

Project Title/Work Order WMC-SD-WM-DP-201 , Rev. 1 "Tank 241-B-109, Cores 169 and 170 Analytical Results for the Final Report"	EDT NO.: N/A
	ECN NO.: ECN-633336

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